

**NOISE ELEMENT  
for the  
GENERAL PLAN  
of the  
CITY OF SAN BRUNO**

**BOOK ONE**

**NOISE ELEMENT**

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**By Maurice A. Garbell**

**M.A.G. CONSULTANTS, INC.  
San Francisco, California**

**August 1975**



**NOISE ELEMENT  
for the  
GENERAL PLAN  
of the  
CITY OF SAN BRUNO**

**BOOK ONE**

**NOISE ELEMENT**

**By Maurice A. Garbell**

**M.A.G. CONSULTANTS, INC.  
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NOISE ELEMENT FOR THE GENERAL PLAN  
OF THE CITY OF SAN BRUNO

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BOOK TWO: Technical Report Compiled for the Information, Guidance, and Ready Reference of the Management and the Administrative Staff of the City of San Bruno and Its Citizens.

BOOK THREE: A Draft Environmental Impact Report for the Noise Element Prepared for Consideration and Adoption by the Planning Commission and the Council of the City of San Bruno.



# M. A. G. CONSULTANTS, INC.

## PREFACE

Pursuant to California Government Code Section 65302(g), the State of California requires that each local jurisdiction include a Noise Element in its General Plan.

In order to comply with the requirement, the City of San Bruno entered into a contract with M.A.G. Consultants, Inc., for the preparation of its Noise Element.

The present Draft Noise Element, as amended from forthcoming public comment, will constitute the Noise Element that is to be incorporated in the General Plan of the City, following its adoption by the City.

The Draft Noise Element comprises three separate BOOKS and a set of accompanying Charts.

BOOK ONE contains three sections, namely:

SECTION N. "Noise in San Bruno."

SECTION I. Goals, Policies, Programs, and Official Positions and Recommendations.

SECTION II. A Plan for Reduction of Noise-Exposure Levels in the City of San Bruno.

BOOK ONE is supplemented by a set of large-scale noise contours, on file at the City Offices, depicting contours of equal decibel (dB) values of the 1975 Community Noise Equivalent Level (CNEL) drawn on a scale equal to that of existing official aerial photographs and street maps and, hence, suitable for use as overlays.

BOOK TWO is a comprehensive technical report describing the scientific background and the technical methodology employed in the preparation of the Draft Noise Element. It contains the following sections:

SECTION III. Discussion of Fundamentals (Sound and Noise).

SECTION IV. Noise Monitoring - A Complex Undertaking.

SECTION V. Summation of Noise Levels.

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BOOK THREE is a formal Draft Environmental Impact Report for the Noise Element.



**Section N**  
**“Noise in San Bruno”**



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N.

## NOISE IN SAN BRUNO

### Environmental Setting.

The City of San Bruno, California, is located almost due west of the San Francisco International Airport. Most of the City lies each of the crest of the Coastal Range, with an extension - a plateau westward from the crestline - comprising the Skyline College campus and a residential community surrounding the College campus. Figs. N-1 and N-2 depict the general and local topography.

### Major Sources of Noise.

#### Highways and Streets.

San Bruno receives the noise of two limited-access Freeways (to which a third will soon be added), two major highway arteries with traffic-signal-controlled access, and several streets which serve as urban connecting links for through express traffic.

Bayshore Freeway, U. S. Route 101, is parallel with much of the City along its eastern flank, from the South San Francisco city line to the Millbrae city line, but the Freeway does not penetrate the municipal boundaries of the City itself.

Interstate Freeway, Route 280, traverses primarily residential areas from the Golden Gate National Cemetery to the County Regional Park.

El Camino Real, California State Route 82, is the main central northwest-southeast artery, which runs approximately midway between Bayshore Freeway Route 101 and Interstate Route 280.

Skyline Boulevard, California State Route 35, traverses residential districts located east and west of the crestline from Sharp Park Road to the approximate location of a proposed future westward extension of State Route 380, and then continues to run above another residential district in San Bruno to its junction with Interstate Route 280 southeast therefrom.

The existing portion of Interstate Route 380, between Interstate Route 280 and El Camino Real, and that portion of 380 between El Camino Real and Bayshore Freeway Route 101 which is currently under construction, of which the latter is an elevated road adjacent to an established residential area in San Bruno.

Among the heavily traveled city streets, San Bruno Avenue and Sneath Lane carry the noisiest traffic; San Mateo Avenue is an artery for heavy and noisy truck traffic, in addition to ordinary street traffic.

### Noise From Miscellaneous Sources.

The "noise of living," emanating from frequently unidentifiable far-off street traffic, off-street motorcycles, music, paging loudspeakers, gardening and landscaping equipment, loud human conversation, animal voices, and miscellaneous mechanical and household noises, from which the identifiable noise of other, less distant, sources rises and falls. The abatement of identifiable noise will result in a lowering of the residual "noise-of-living" background level.



Fig. N-1.

General Location  
San Bruno



Local Topography  
San Bruno

Fig. N-2.

Noise N-3

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### N. Noise in San Bruno, continued.

#### Railroads.

The northeastern part of the City of San Bruno is traversed by a major rail line of the Southern Pacific Transportation Company (SPTR) which runs substantially parallel to the Bayshore Freeway. The line serves heavy long-distance freight-train traffic and commuter passenger traffic along the San Francisco Peninsula.

This line is supplemented by a branch line that extends from San Bruno to Daly City and by a tightly curving circular track, along Bayshore Circle, which connects the South San Francisco line with the Daly City line.

#### Stationary Industrial Noise Sources.

There are no known major noisy industrial activities in San Bruno. The noisiest stationary sources of noise in San Bruno appear to be the alarm horns at the fire station at the City Hall and elsewhere, which are sounded to denote unmistakably the hour of noon, and again at 5 p.m.

#### Aircraft.

San Bruno is affected principally by noise emanating from air-carrier aircraft that follow two departure paths, namely, one from the San Francisco International Airport and one from the Oakland International Airport:

1. Departures from San Francisco Runways 28-Right and 28-Left that proceed almost straight northwestward through the San Bruno Gap and impose intense noise upon an area within a boundary generally defined by the Belle Air School, Camino Plaza, the Naval Installation (at the corner of El Camino Real and Sneath Lane) and all areas in San Bruno that extend northwardly therefrom, including Tanforan and the "Bayshore Circle Wedge."
2. Departures from Oakland International Airport Runway 29 (and, at times, San Francisco Runways 01) which, on many occasions, are given radar vectors (verbal directional instructions) to cross the western portion of the San Francisco International Airport and the City of San Bruno on a south-southwestward shortcut at altitudes of from 5,000 to 8,000 feet. That course frequently runs over a line in San Bruno that passes through the Civic Center and the County Regional Park.

Departures from Runways 01 at the San Francisco International Airport, in general, are heard relatively little throughout the lower portions of the City of San Bruno. However, in the upper Crestmoor area overlooking Interstate Highway Route 280, the noise emitted during the initial portion of the takeoff run on Runways 01 is heard more loudly than in areas located closer to the Airport, even though the hilly area in Millbrae, lying east of the upper Crestmoor area, cuts off the visual line of sight of the thresholds of Runways 01; yet, the sound appears to travel either by reflection from the atmospheric temperature-inversion usually overlying the region or by reflection from the higher Skyline Ridge.

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### N. Noise in San Bruno, continued

#### Purpose and Scope of the Noise Element.

State legislation has provided a mandate specifying that a General Plan or a Comprehensive Plan of a city must contain a Noise Element. Section 65302(g) of the California Government Code requires all cities and counties in California to include in their general, and comprehensives, plans a transportation element, as described in the following specification:

"A noise element in quantitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to the following:

- (1) Highways and freeways
- (2) Ground rapid transit systems
- (3) Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics.

These noise contours may be expressed in any standard acoustical scale which includes both the magnitude of noise and frequency of its occurrence. The recommended scale is sound level A, as measured through the A-weighted network of a standard sound level meter, with corrections added for the time duration per event and the total number of events per 24-hour period.

Noise contours shall be shown in minimum increments of five decibels and shall be continued down to 65 dB(A). For regions involving hospitals, rest homes, long-term medical or mental care, or outdoor recreational areas, the contours shall be continued down to 45 dB(A).

Conclusions regarding appropriate site or route selection alternatives or noise impact upon compatible land uses shall be included in the general plan.

The state, local, or private agency responsible for the construction or maintenance of such transportation facilities shall provide to the local agency producing the general plan, a statement of the present and projected noise levels of the facility, and any information that was used in the development of such levels."

The Noise Element submitted herewith by us complies with that specification.

In order to afford the City of San Bruno foreseeable beneficial leverages, the present Noise Element goes beyond the minimal requirements of the California Government Code by adding certain recommendations and policy guidelines applicable to noise mitigation both for the exterior noise and for necessary outdoor-to-indoor noise reduction as set forth in Title 25 of the State Administrative Code, Chapter 1, Subchapter 1, Article 4, Section 1092(e)(1) through (e)(4), which specify the following Noise Insulation Standards:

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### N. Noise in San Bruno, continued

#### "(e) Noise Insulation from Exterior Sources:

- (1) Location and Orientation. Consistent with land-use standards, residential structures located in noise critical areas, such as proximity to select system of county roads and streets (as specified in 186.4 of the State of California Streets and Highways Code), railroads, rapid transit lines, airports, or industrial areas shall be designed to prevent the intrusion of exterior noises beyond prescribed levels with all exterior doors and windows in the closed position. Proper design shall include, but shall not be limited to, orientation of the residential structure, set-backs, shielding, and sound insulation of the building itself.
- (2) Interior Noise Levels. Interior community noise equivalent levels (CNEL) with windows closed, attributable to exterior sources shall not exceed an annual CNEL of 45 dB in any habitable room.
- (3) Airport Noise Source. Residential structures to be located within an annual CNEL contour (as defined in Title 4, Subchapter 6, California Administrative Code) of 60 dB require an acoustical analysis showing that the structure has been designed to limit intruding noise to the prescribed allowable levels. CNEL's shall be as determined by the local jurisdiction in accordance with its local general plan.
- (4) Vehicular and Industrial Noise Sources. Residential buildings or structures to be located within exterior community noise equivalent level contours of 60 dB of an existing or adopted freeway, expressway, major street, thoroughfare, railroad or rapid-transit line shall require an acoustical analysis showing that the proposed building has been designed to limit intruding noise to the allowable interior noise levels prescribed in Section 1092(e)(2). Exception: Railroads where there are no nighttime (10:00 p.m. to 7:00 a.m.) railway operations and where daytime (7:00 a.m. to 10:00 p.m.) railway operations do not exceed four (4) per day."

#### Methodology.

The measure of noise in the Noise Element for the City of San Bruno has been expressed in terms of the State-defined "community noise equivalent level (CNEL)."

The CNEL for the four primary noise sources that affect the City of San Bruno has been obtained by the following means and method:

##### 1. Freeways and other numbered State routes:

The contour maps provided by the Division 04 (Highways) of the California Department of Transportation (CalTrans), showing values of the ten-percent exceedence level,  $L_{10}$ , were translated by us into CNEL values.

Actual measurements were then made to ascertain and verify the validity of the CNEL values that were thus obtained.

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### N. Noise in San Bruno, Methodology, continued.

#### 2. City streets with a peak-hour traffic volume of over 200 vehicles:

Actual measurements were made by us at a number of representative stations, and standard calculation methods were applied to obtain CNEL values for traffic data that were supplied by the Planning and Engineering Departments of the City of San Bruno and the County of San Mateo.

#### 3. Railroads.

By calculations based on a generalized technical report ("how-to-do-it") issued by the Southern Pacific Transportation Company (S PTR) and on schedules and information of train lengths and speeds, also supplied by the S PTR.

Actual precise measurements were made by us along individual segments of the rail lines passing through San Bruno.

#### 4. Aircraft.

Actual measurements were made by us at numerous locations throughout the City. Use was also made of calculations made by consultants for the City of South San Francisco (including ourselves), the San Francisco International Airport, and the Association of Bay Area Governments.

Our noise monitoring included the collecting of cumulative statistical noise distributions according to the share of time at which certain dB levels prevail in a given location, and were also based on detailed analyses of individual noise events monitored and recorded by us.

The totals obtained were used to determine and verify the overall cumulative statistical CNEL values.

1975

## NOISE CONTOURS

In compliance with the provisions of California Government Code Section 65302(g), and by an expansion beyond the narrow scope of said provisions, contours have been drawn through points having uniform CNEL values at 5-decibel intervals on two sets of graphs which, in full scale, comprise transparent noise-contour overlays for the San Mateo 400-foot-to-the-inch orthophoto air photographs, terrain contour charts, and street maps.

One set comprises contours of equal community noise equivalent levels (CNEL) produced by the dominant noise sources on the ground, namely, the transportation noise sources on roads, highways, and streets, in combination with the diffused urban roar inherent in other human activities.

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### N. Noise in San Bruno, 1975 Noise Contours, continued.

A second set comprises contours of equal annual CNEL attributable to aircraft noise. In the absence of extensive, year-around, noise-monitoring data, this set is the set of aircraft-noise CNEL contours currently adopted by the San Mateo County Airport Land Use Committee (ALUC) as amended for the San Bruno Gap per our amendment and correction of 1973. Inasmuch as the annual aircraft-noise CNEL in San Bruno has a marked two-season fluctuation that is controlled by the wind-conditioned utilization of runways at the San Francisco International Airport for takeoff, the set of annual CNEL contours should be understood to depict CNEL values that are approximately 3 dB higher during the "summer season" (May through September) and approximately 10 dB lower during the "winter seasons" (October through April. Thus, for example, the "70-dB annual-CNEL" contour on the ALUC chart represents the 73-dB summer-CNEL" and the "60-dB winter-CNEL" contours, also.

The Planning Department of the City of San Bruno holds available for inspection the following maps and charts:

1. County of San Mateo base maps and ground-noise CNEL contour overlay transparencies at a scale of 400 feet to the inch;
2. Aircraft-noise CNEL contours plotted on the same base maps at the same scale.

The following small-scale reproductions are appended to the present Section N:

1. Ground-noise CNEL contours superimposed on the County of San Mateo base maps at a scale of 1,000 feet to the inch (5 sheets: 4-B, -C, -D, 5-C and 5-D).
2. Aircraft-noise CNEL contours, as adopted by the San Mateo ALUC, at a scale of approximately 5,000 feet to the inch.

For reasons that become self-evident in the technical report (BOOK TWO), it has not been found practicable to draw a set of comprehensive charts showing the combined total of the ground-source-produced and the aircraft-produced CNEL throughout the City of San Bruno. A simple methodology is provided in Section XII (BOOK TWO) for the summation of CNEL's derived from noise sources on the ground and from aircraft flight activities.

### FUTURE NOISE CONTOURS.

For reasons set forth in Section VI and XIV (BOOK TWO) it is concluded that the following overall changes in the numerical values of the community noise equivalent levels (CNEL) in San Bruno will obtain in 1985 and 1995, without, however, any significant changes in the geometric shape of the CNEL contours:

<u>Source of Noise</u>	<u>CNEL in 1985</u>	<u>CNEL in 1995</u>
Total road traffic	5 dB less than in 1975	7 dB less than in 1975
Railroad traffic	7 dB less than in 1975	10 dB less than in 1975
Aircraft flight operations (primarily with reference to the San Francisco International Airport)	8 dB less than in 1975	12 dB less than in 1975

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### N. Noise in San Bruno (continued).

#### Use and Applicability of the Noise Element.

From the outset, the Noise Element supplies a description of the present noise climate of the City. It aids the planner in land-use planning as a guide in the selection of land uses that are compatible with the existing noise levels. It also aids the building inspector in reviewing plans for proposed structures by enabling him to verify that a proposed structure complies with applicable noise-reduction standards.

The Noise Element supplies a basis for determination of traffic-control measures that would channel noisy traffic away from the noise-sensitive areas.

The Noise Element supplies evidence to support and buttress requests by the City, addressed to the operators of noise-producing facilities, that certain noise-mitigating measures be undertaken for the benefit of the City and its residents.

The Noise Element affords a forecast of future noise that can be reasonably anticipated. In this respect the Noise Element ceases to be a mere descriptor of a passively endured noise climate. The Noise Element then becomes a guide for timely and judicious intervention by the City, in conjunction with appropriate action by other cities in Northern San Mateo County, that can usefully support actions to bring about mitigation of noise for the benefit of all participating cities. Such action is required to modify and diminish the future noise patterns of a number of controllable noise sources, with especial, but not exclusive, emphasis on highway noise, railroad noise, aircraft-flight noise, and airport-operations noise.

The forecasts and plans portions of this Noise Element reflect the scope and anticipated effectiveness of active and timely intervention by the City and its neighbor cities in an areawide noise-abatement effort.

The Noise Element includes a section in which the environmental impact of noise sources and noise-abatement efforts is described and recommendations are formulated.

\*

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N. Noise in San Bruno, continued.

PLANNING AND NOISE ABATEMENT -

A GENERAL POLICY RECOMMENDATION

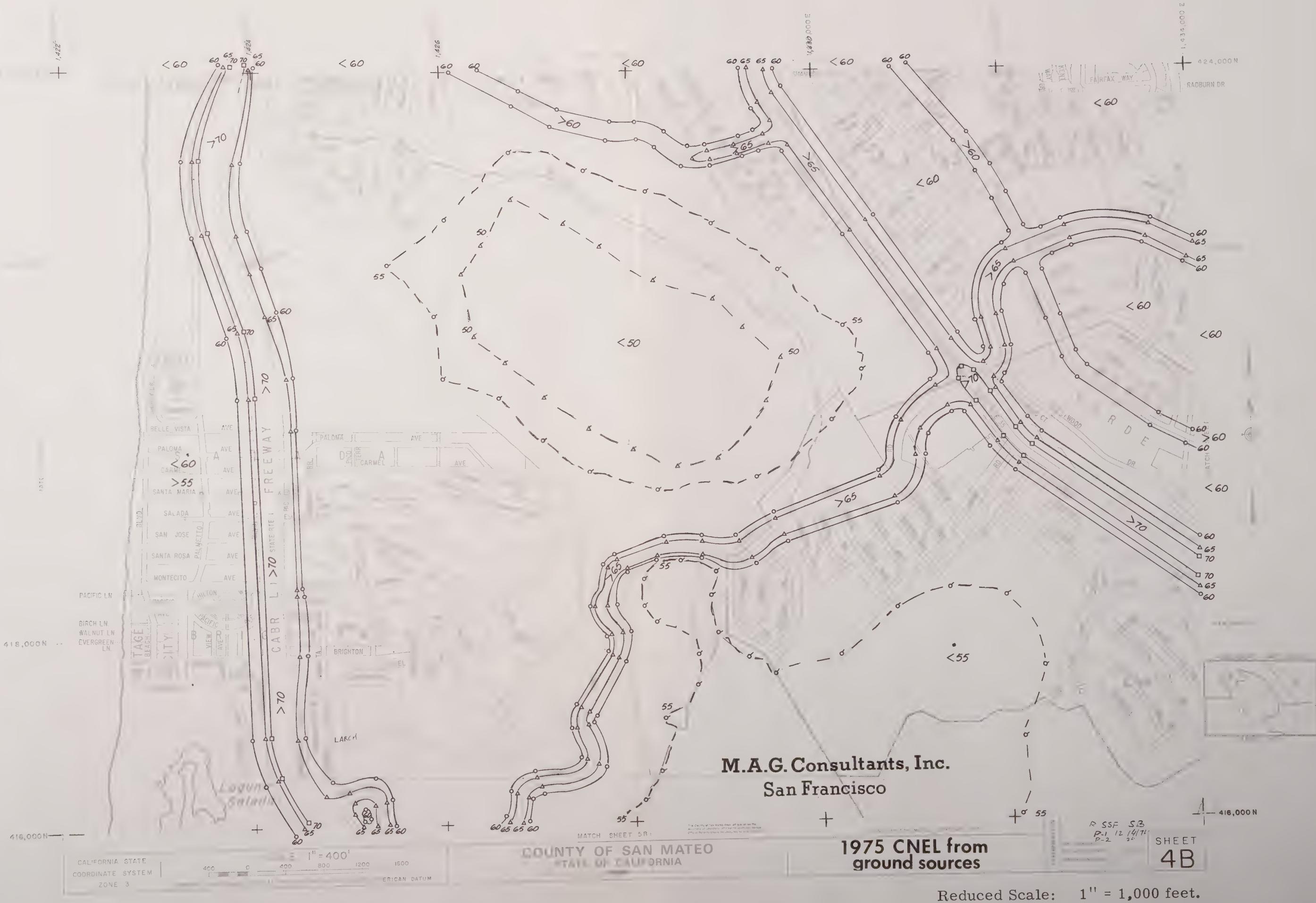
The foregoing forecasts are based on an interpretation of the physical circumstances prevailing in July 1975 and on stated intents of National, State, and airport legislators.

There remains an element of uncertainty in any forecast. It is recommended that, in the course of their forthcoming deliberations, the Planning Commission and the City Council of the City of San Bruno apply a measure of conservatism and caution in the formulation of the General Plan of the City of San Bruno. More especially, land-use planning and building-code provisions should be initially based on current CNEL's and should be progressively amended when dependable facts are established by Federal and industrial decision-makers.

On the other hand, it is recommended that the City of San Bruno go forward firmly with programs and official positions and recommendations that will oblige the makers of noise to abate their noise.

Cities elsewhere have successfully achieved abatement of abatable and unnecessary noise. The City of San Bruno, in concert with its contiguous and adjacent sister cities, can and should do no less.

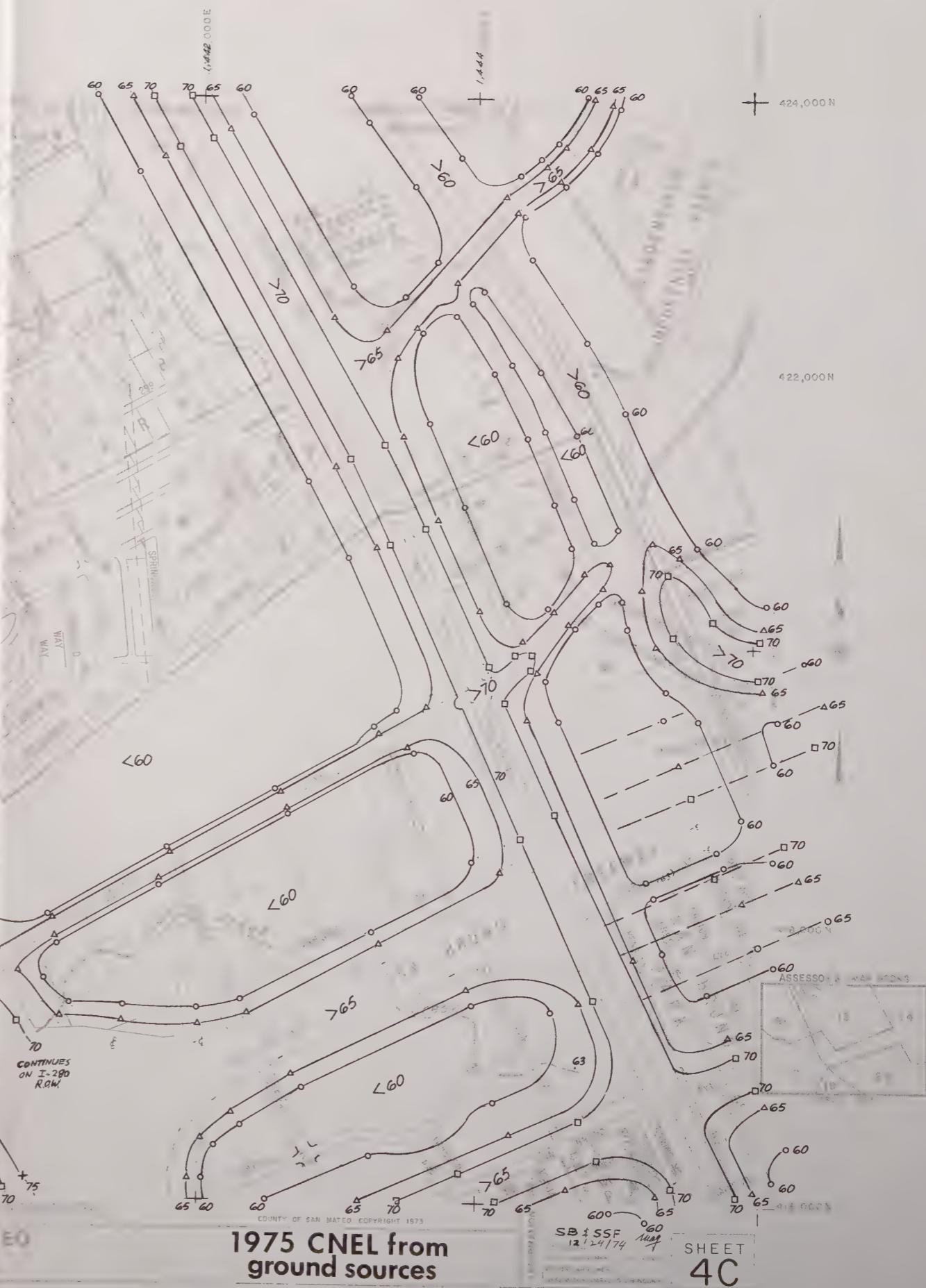
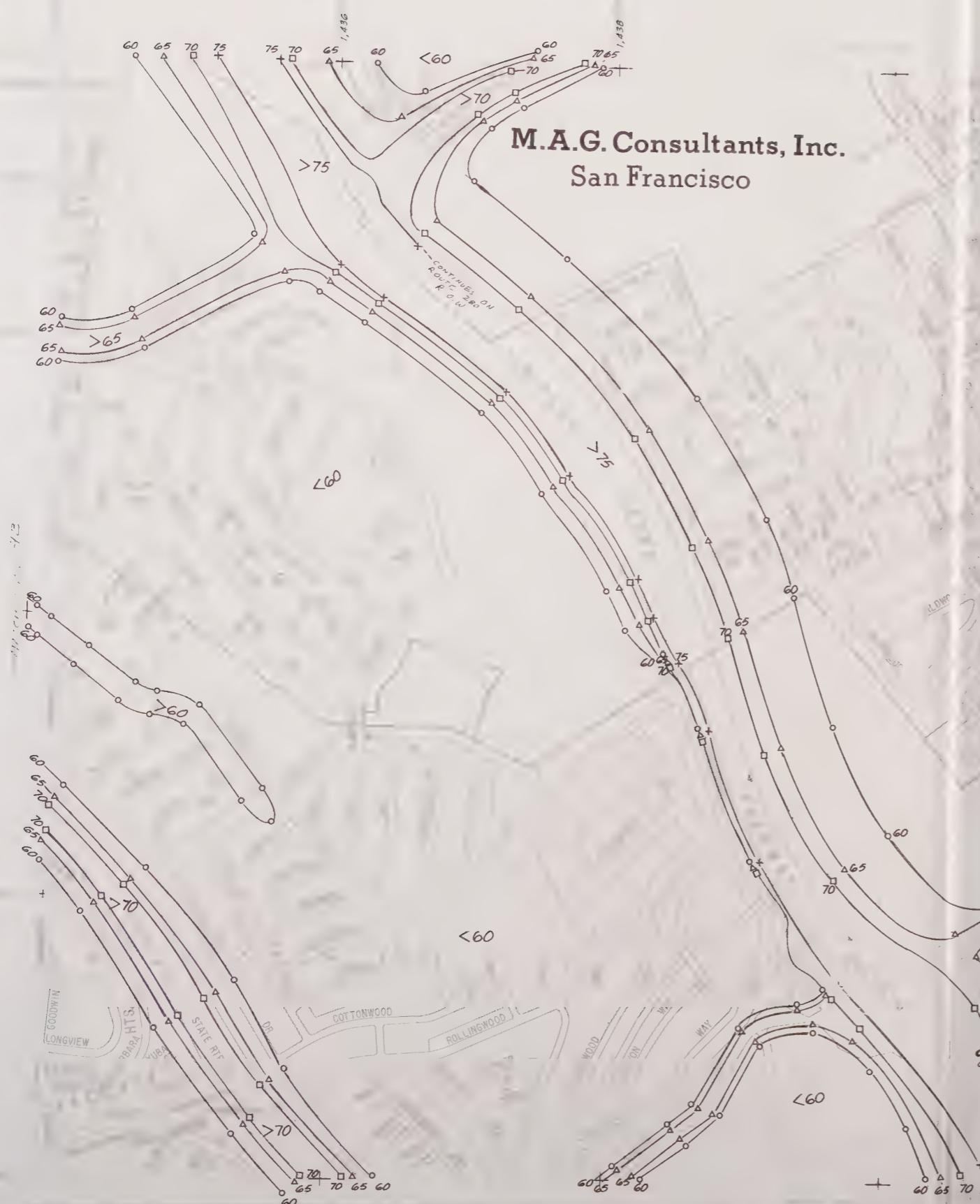
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## 1975 CNEL from ground sources

Reduced Scale: 1" = 1,000 feet.



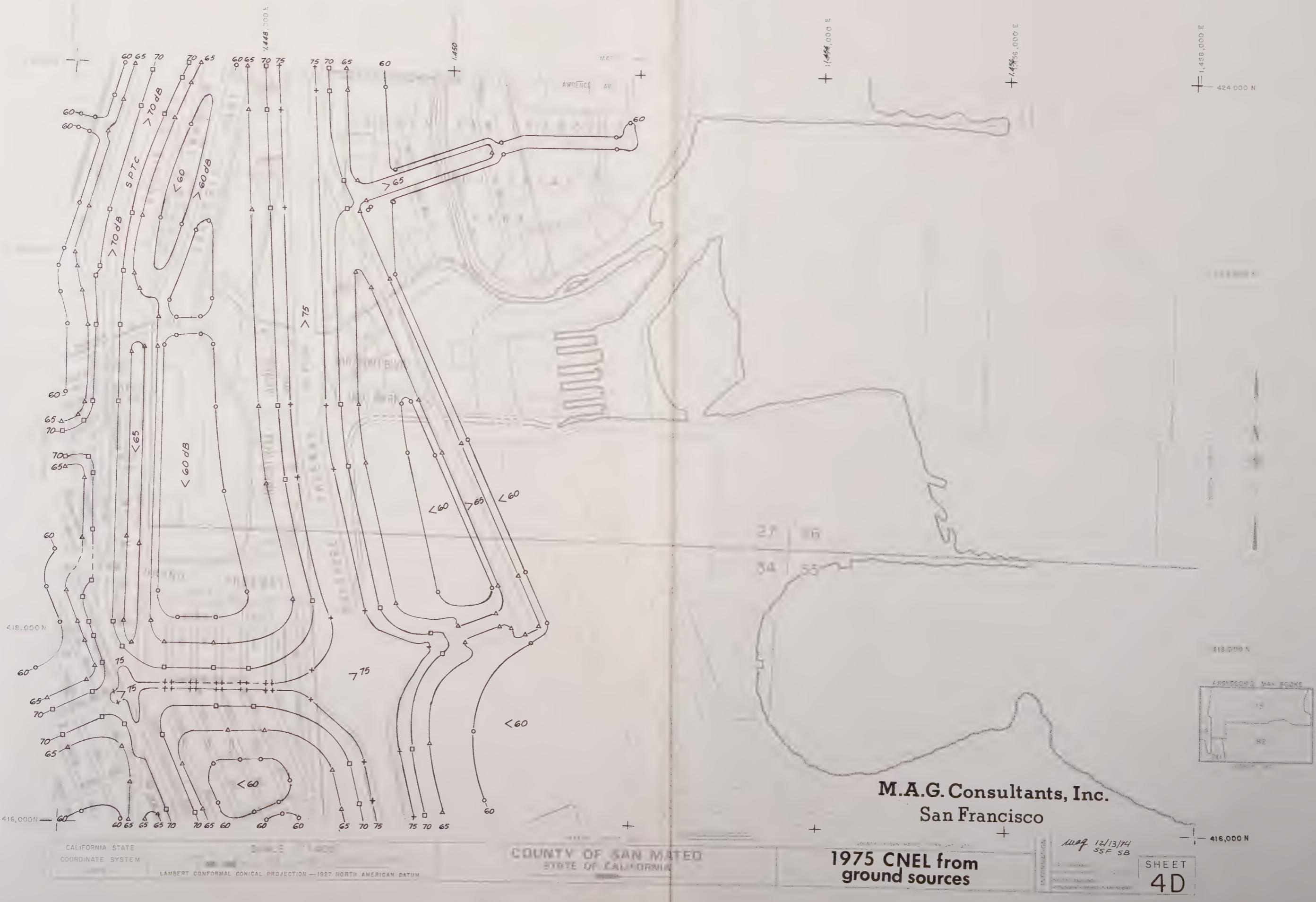


# 1975 CNEL from ground sources

SHEET  
4C

Reduced Scale: 1" = 1,000 feet.







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**San Francisco**

CALIFORNIA STATE  
COORDINATE SYSTEM  
ZONE 3

SCALE 1" = 400'  
400 800 1200 600  
LAMBERT CONFORMAL CONICAL PROJECTION - 1927 NORTH AMERICAN DATUM

**COUNTY OF SAN MATEO  
STATE OF CALIFORNIA**

# 1975 CNEL from ground sources

INFORMATION  
SB *May 12/21*  
NAME  
THE B.C.G. NAMES C.T.Y.  
MAJOR LANDLINES

SHEET  
5C

SCALE 1" = 400'

MATCH SHEET 60

COUNTY OF SAN MATEO, COPYRIGHT 1978

Reduced Scale: 1" = 1,000 feet.





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**COUNTY OF SAN MATEO  
STATE OF CALIFORNIA**

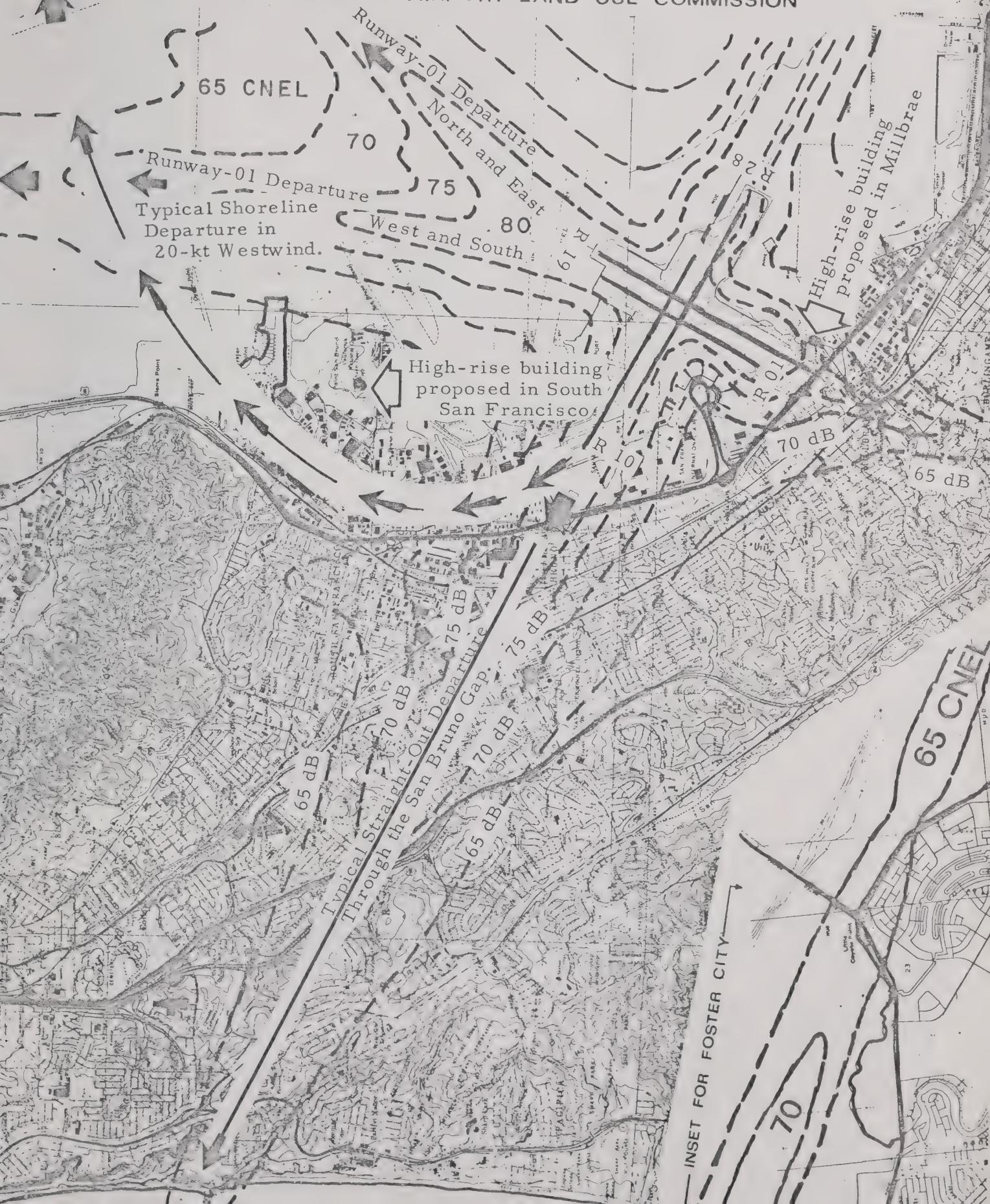
# 1975 CNEL from ground sources

HEET  
5D

Reduced Scale: 1" = 1,000 feet.



# INTERIM AIRPORT LAND USE PLAN SAN FRANCISCO AIRPORT PLAN AREA SAN MATEO COUNTY AIRPORT LAND USE COMMISSION





**Section I**  
**Goals, Policies, Programs and**  
**Official Positions and Recommendations**



**I. GOALS, POLICIES, PROGRAMS, AND  
OFFICIAL POSITIONS AND RECOMMENDATIONS**

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NOISE ELEMENT FOR THE GENERAL PLAN  
OF THE CITY OF SAN BRUNO

GOALS, POLICIES, PROGRAMS, AND  
OFFICIAL POSITIONS AND RECOMMENDATIONS

This portion of the Noise Element for the General Plan of the City of San Bruno is an abridged agenda, that is, a list of action items, for the reduction of abatable noise and for community planning in the presence of unabatable noise, for the benefit of the City.

The background of each action item, the reason for the need for its resolution, and a summary of benefits to be derived from its implementation will be found in the full text of "A PLAN FOR REDUCTION OF NOISE-EXPOSURE LEVELS IN SAN BRUNO. 1975," with specific reference to each action item in this agenda.

All action items are classified as follows:

1. Goals. The objectives to be achieved.
2. Policies. The general courses or methods whereby the City should seek to achieve the goals or objectives.
3. Programs. The specific courses of action that the City, its governing body, its commissions and boards, and its management and administration should pursue to implement the adopted policies within its own sphere of jurisdiction and responsibility.
4. Official Positions and Recommendations. The specific courses of action that the City wishes to cause other governmental agencies to adopt and pursue in a common endeavor to achieve goals that are of mutual benefit.

Grading of the planning elements with respect to their presumable degree of urgency, effectiveness, and hoped-for benefits has been given much thought. In matters of noise it is clearly impossible to satisfy everybody: Noise to one person may be pleasing sound to another person: Among three neighbors, one may complain primarily about the noise from aircraft, the second may find the barking of dogs to be far worse than the noise from the, and the third may lay the blame for the barking of dogs upon the disturbance which aircraft noise apparently inflicts on the dogs.

It has been said that noise is somewhat like an onion: Remove one layer, and another layer comes to the fore. If one abates the aircraft noise to reduce the provocation for the dogs to bark, perhaps the dogs will then find some other source of provocation in the absence of irritating aircraft noise. If one trains the dogs – as they should be trained – to hold their peace during far-off aircraft noise events, the aircraft-noise events may appear to become subjectively more pronounced in the consciousness of some of the observers. Therefore, the only reasonable conclusion is that comprehensive corrective actions are needed.

The sequential listing in this Noise Element of Planning Goals, Policies, Programs, and Official Positions and Recommendations (OP&R) follows a logical technical order and is not intended to serve as a priority list. Action programs with specified work schedules should be established subsequently.

The analysis of each goal and each topic thereunder is founded on the apparent weight of the respective noise impingement on the citizens and residents of the City of San Bruno as perceived from some twenty years of attentive surveillance of the various sources of noise and the expressed views and comments received from people living in San Bruno over the years, coupled with the views expressed by citizens of San Bruno on the record during the "Public Noise Forum" hearing at the City Hall of the City of San Bruno on June 18, 1975, and the recommendations made by the Planning Department of the City of

The Statement of Goals, Policies, Programs, and Official Positions and Recommendations is set forth to enable the City of San Bruno to develop therefrom and to formulate and update, as necessary:

1. Action programs and checklists of action items in the approximate order of importance and need.
2. Action programs that reflect the practical feasibility of a realistic implementation schedule.

Under each goal, the policies are listed and numbered without any currently intended order of priority of action.

Under each policy, the programs and OP&R's are categorized according to an anticipated time schedule of implementation, as follows:

SHORT RANGE: Programs expected to be implemented in 1 to 3 years.

MIDDLE RANGE: Programs expected to be implemented in 5 years.

LONG RANGE: Programs expected to be implemented in 10 years.

ON-GOING: OF&R continuous in nature – an on-going concern or policy.

\*

# M. A. G. CONSULTANTS, INC.

## GOAL I.

### ABATEMENT OF UNNECESSARY NOISE FROM AUTOMOTIVE VEHICLES.

#### Policy 1.

Enforce noise-emission standards for all types of automotive vehicles established by the California Vehicle Code and by Federal regulations.

#### Program 1(1).

MIDDLE RANGE

Establish means for -

- (a) an identification of apparent violators;
- (b) a verification of noise levels produced by identified vehicles;
- (c) a verifiable and certifiable correction of any defect.

This could be accomplished, in part, by the creation of an Environmental Standards Section and a Noise-Abatement Enforcement Unit in the City.

Reference: Topic I-1 of "A Plan for Reduction of Noise-Exposure Levels . . ." (Page Noise II-5)

#### Policy 2.

Reduce noise exposure levels in populated places produced by noise emissions from heavy passenger buses.

#### Program 2(1).

SHORT RANGE

Reduce noise emissions on any city-owned buses by suppressing engine noise and exhaust noise.

#### Program 2(2).

SHORT RANGE

Move bus stops away from sites of schools and other places where large numbers of people congregate to communicate by speech.

#### Program 2(3).

MIDDLE RANGE

Provide means for traffic control to maintain a smooth flow of traffic on main thoroughfares adjacent to school sites and other places of mass assembly; suppress traffic at cross streets.

#### Official Position and Recommendation 2(4).

ON-GOING

Urge operators of buses to reduce unnecessary noise emissions from engines and exhaust mufflers.

#### Official Position and Recommendation 2(5).

LONG RANGE

Consider the possible future introduction of electric trolley buses, if and when traffic density and headway justify the investment.

Reference: Topic I-2 of "A Plan for Reduction of Noise-Exposure Levels . . ." (Page II-6)

## M. A. G. CONSULTANTS, INC.

### GOAL I. (continued)

#### Policy 3.

Keep trucks off residential streets as much as possible.

##### Program 3(1).

SHORT RANGE

Establish and update at regular intervals a system of truck routes through the City and establish and maintain a prohibition against use of residential streets by trucks.

##### Program 3(2).

MIDDLE RANGE

Investigate the feasibility of extending or constructing new truck routes through the City without impinging on residential areas.

Reference: Topic II-1 of "A Plan for Reduction of Noise-Exposure Levels..."  
(Pages II-14 through II-16)

##### Official Position and Recommendation. 3(3).

MIDDLE RANGE

Consider the possibility of limiting the use of Interstate Route 280 by trucks in conjunction with other cities and the State of California.

#### Policy 4.

Reduce noise emissions from city-owned vehicles.

##### Program 4(1).

SHORT RANGE

Establish noise criteria for evaluation of vehicles offered for sale to the City.

##### Program 4(2).

SHORT RANGE

Verify the actual noise performance of city-owned vehicles as part of the routine maintenance schedule. Establish maximum noise levels as a criterion for repair or replacement of components.

Reference: Topic I-3 of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-6)

#### Policy 5.

Reduce traffic-noise impingement on dwellings by establishing supplementary, noise-oriented, criteria for setback of building lines and terracing or staggering of two-story and multi-story buildings.

##### Program 5(1).

MIDDLE RANGE

Establish building setback and terracing and staggering criteria for each road and street along which the present or highest future CNEL exceeds 70 dB CNEL at the curbline.

Reference: Topic II-1(c) and II-1(d) of "A Plan for Reduction of Noise-Exposure Levels ..." (Page II-18).

# M. A. G. CONSULTANTS, INC.

## GOAL 1. (continued)

### Policy 6.

Construct, or have constructed with support from the State of California, noise barriers along selected route segments of Freeway Routes 280, 380, and 101.

#### Program 6(1).

#### LONG RANGE

Request consideration by the State of California of requests for noise barriers along freeway route segments specified in "Topic III-1(a)" of the "Plan" portion of this Noise Element, pursuant to the circular letter from the Department of Transportation, dated January 9, 1975, entitled, "Proposed Noise Attenuation Projects on Existing Freeways."

Reference: Topic III-1(a) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-38)

### Policy 7.

Consider the possibility and advisability of the construction of noise barriers along selected segments of streets in San Bruno.

#### Program 7(1).

#### LONG RANGE

Initiate a program for the detailed investigation of acoustic needs and effectiveness, aesthetic aspects, cost, and possible security problems of noise barriers along selected segments of streets in San Bruno, and also along portions of frontages of schools and other public buildings.

Reference: Topic III-1(b) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-39).

### Policy 8.

Mitigate the environmental impact on the City of San Bruno from ground-access traffic to and from the San Francisco International Airport.

#### Official Position and Recommendation. 8(1).

#### LONG RANGE

Establish and maintain an official position of the City of San Bruno before county and regional decision-making bodies, so that the mitigating measures to be afforded the environmental impact of an enlarged passenger volume of the San Francisco International Airport include at least the following:

1. At least one-fourth of the present seventeen million annual passengers to be transported to and from the Airport by collective or mass transit.
2. All passengers over seventeen million annual passengers be transported to and from the Airport by collective or mass transit.

Reference: Topic II-1(b) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-17)

# M. A. G. CONSULTANTS, INC.

## GOAL II.

### ABATEMENT OF UNNECESSARY NOISE FROM AIRPORT AND FLIGHT ACTIVITIES.

#### Part One: The San Francisco International Airport.

##### Policy 1.

Abate unnecessary noise from the San Francisco International Airport and flights to and from that Airport.

##### Official Position and Recommendation. 1(1).

ON-GOING

Urge the City and County of San Francisco through its Airports Commission to adopt, by resolution, an operating policy and regulations limiting the use of the Airport to aircraft certificated in accordance with Federal Aviation Regulations Part 36 (FAR 36) by a date certain.

(Page II-24)

Reference: Topic II-5(a)(1) of "A Plan for Reduction of Noise-Exposure Levels..."

##### Official Position and Recommendation. 1(2).

ON-GOING

Urge the City and County of San Francisco through its Airports Commission to implement noise-monitoring and disciplinary measures to enforce operation of aircraft to achieve actual compliance with the noise-exposure levels specified in FAR 36.

(Page II-24)

Reference: Topic II-5(a)(2) of "A Plan for Reduction of Noise-Exposure Levels..."

##### Official Position and Recommendation. 1(3).

ON-GOING

Urge the Environmental Protection Agency and the airlines to adopt and implement two or three alternative noise-abatement climb procedures, designed to afford optimal noise abatement for a "close-in" area (up to three nautical miles from the takeoff runway), an "intermediate" area (three to six nautical miles from the takeoff runway), and a "distant" area (more than six nautical miles from the takeoff runway), the last procedure being designated as the "best-climb" procedure.

##### Official Position and Recommendation. 1(4).

ON-GOING

Urge the airlines and the air-traffic-control system to adopt and maintain a "best-climb" procedure for all departures from SFO Runways 01.

##### Official Position and Recommendation. 1(5).

ON-GOING

Urge the airlines and the air-traffic-control system to adopt and maintain a "close-in" or an "intermediate" noise-abatement climb procedure for departures from Runways 28.

Reference: Topic II-5(a)(3) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-25)

# M. A. G. CONSULTANTS, INC.

## GOAL II (continued)

### Official Position and Recommendation. 1(6). ON-GOING

Urge the Federal Aviation Administration (FAA) to enforce left-turn paths for southbound departures from SFO Runways 01 that will cause aircraft to recross San Bruno at or above 7,000 feet altitude msl.

### Official Position and Recommendation. 1(7). ON-GOING

Urge the FAA to continue the exploration of southbound paths from SFO over the waters of the San Francisco Bay, whenever their use is safe and practicable.

Reference: Topic II-5(a)(4) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-27)

### Policy 2.

Help to abate unnecessary noise from the San Francisco International Airport in the Cities of Millbrae, Burlingame, and Hillsborough.

### Official Position and Recommendation. 2(1). ON-GOING

Urge the Airports Commission of the City and County of San Francisco, the FAA, and the airlines, to make all practicable and effective provisions for an alleviation of the noise burden of the City of Millbrae and other cities south of the Airport.

Reference: Topic II-5(a)(5) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-28)

### Policy 3.

Minimize Heavy Departures From SFO Runways 28.

### Official Position and Recommendation. 3(1). ON-GOING

Urge the Airports Commission of the City and County of San Francisco and the FAA to extend the length of Runways 01 (or, at least, Runway 01-Right) by the following two measures:

1. Construction of an effective jet-blast deflector at the physical threshold of Runway 01-Right, so that full thrust application can be made there without disturbing automobile traffic on Bayshore Freeway, and thereby gaining 600 feet in usable runway length.
2. Northward extension of Runway 01-Right (and, if possible, Runway 01-Left).

These improvements will avert numerous takeoffs from Runway 28 with subsequent shallow, laborious, and noisy low overflights of residences in San Bruno and the San Bruno Gap.

(continued)

## M. A. G. CONSULTANTS, INC.

### GOAL II (continued)

These improvements will also permit numerous takeoffs on Runways 01 with reduced (so-called "normal") takeoff thrust, instead of "maximum" takeoff thrust, with resulting noise abatement for Millbrae and cities south therefrom.

The improvements intended for an effective lengthening of Runways 01 should be coupled with the construction of means for the effective shielding of parts of Millbrae and Burlingame from primary-jet noise from departing aircraft on Runways 01, and for the scattering of some of that noise in the area just south of Runways 01, which currently acts as a reflection bowl, an improvement that would benefit significantly the Cities of Millbrae, Burlingame, and Hillsborough.

Reference: Topic II-5(a)(6) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-26)

#### Policy 4.

Favor Minimization of Nighttime Departures.

Oppose Scheduling of New "Red-Eye Specials" at Night.

Official Position and Recommendation. 4(1).

ON-GOING

Urge, in all decision-making bodies, that nighttime departures be minimized, except for departures by "quiet" aircraft.

Reference: Topic II-5(a)(7) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-31)

#### Policy 5.

Participate in the resolution of the pending controversy over the proposed Visitacion Rancho development, in order that the development not inure to the disadvantage of the City of San Bruno.

Official Position and Recommendation. 5(1).

ON-GOING

Urge the developer, on the one hand, and the City and County of San Francisco through its Airports Commission, on the other hand, to enter into a binding contractual arrangement whereby:

1. The City and County of San Francisco would agree to its faithful performance of specified measures to achieve noise abatement in the area of the Visitacion Rancho development; and
2. The developer, on his or its own behalf and on behalf of its successors, lessees, and assigns, would guarantee assurance of certain improvements in structural noise reduction, orientation, and design features in the proposed buildings in the Visitacion Rancho developments, and would grant the City and County of San Francisco (as the owner and operator of the San Francisco International Airport), an aviation easement and a noise easement over any and all parts of the development.

Reference: Topic II-5(a)(8) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-32)

## **M. A. G. CONSULTANTS, INC.**

### **GOAL II (continued)**

#### **Policy 6.**

Abate unnecessary noise from sustained test runs and runups of aircraft engines on the ground.

##### **Official Position and Recommendation. 6(1).**

**ON-GOING**

Urge owners and operators of aircraft-engine test cells and test stands to ensure that noise levels of 50 dBA attributable to maximum-power runs not be exceeded at any residence within the City at any time.

##### **Official Position and Recommendation. 6(2).**

**ON-GOING**

Urge owners and operators of airport facilities to enforce rules for on-aircraft engine runups, prohibiting high-power jet-engine runups at night, and prohibiting runups near residential areas at any time, unless engine noise-suppressors are used to limit sustained noise levels at the nearest residence to 50 dBA.

**Reference:** Topic I-7(b) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-13)

##### **Program 6(3).**

**ON-GOING**

Identify commercially and industrially-zoned areas where buildings of reasonable height could serve as an effective line-of-sight barrier against ground noise generated at the Airport, and encourage the design and site planning of proposed commercial and industrial buildings to create a shielding noise barrier for the City.

**Reference:** Topic III-4 of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-40)

##### **Official Position and Recommendation. 6(4).**

**ON-GOING**

Encourage the Airports Commission of the City and County of San Francisco to include in its plans for the development of the airport property west of Bayshore Freeway (Route 101), design and site-plan criteria that would result in the construction of noise-shielding buildings between the Freeway and the San Bruno City limit.

**Reference:** Topic III-4 of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-40)

\*

-End of Part One: The San Francisco International Airport.

-Part Two: The Naval Air Station Alameda follows on next page.

**M. A. G. CONSULTANTS, INC.**

GOAL II (continued)

Part Two: The Naval Air Station Alameda.

Policy 7.

Abate unnecessary noise attributable directly or indirectly to the activities of the Naval Air Station Alameda and flights to and from that Base.

Official Position and Recommendation. 7(1).

ON-GOING

Encourage the continuation of the present coordination of activities between the Federal Aviation Administration and the Naval Air Station Alameda Air-Traffic-Control toward a minimization of a noise impact of such activities on the West-Bay.

Reference: Topic II-5(b) of "A Plan for Reduction and Noise-Exposure Levels..."  
(Page II-33)

\*

-End of Part Two: The Naval Air Station Alameda.

-Part Three: The Oakland Airport follows on next page.

**M. A. G. CONSULTANTS, INC.**

**GOAL II (continued)**

Part Three: The Oakland Airport.

Policy 8.

Abate unnecessary noise from the Oakland Airport and flights to and from that Airport.

Official Position and Recommendation. 8(1).

ON-GOING

Urge the City of Oakland, through its Board of Port Commissioners, to adopt, by resolution, an operating policy and regulations limiting the use of the Airport to aircraft certificated in accordance with Federal Aviation Regulations Part 36 (FAR 36) by a date certain.

Reference: Topic II-5(c)(1) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-34)

Official Position and Recommendation. 8(2).

ON-GOING

Urge the airlines to have those Oakland aircraft engaged in a departure climb over or west of the San Francisco International Airport follow a "best-climb" procedure, in order that they cross the City of San Bruno as high and as quietly as possible.

Reference: Topic II-5(c)(2) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-35)

Official Position and Recommendation. 8(3).

ON-GOING

Urge the airlines and the FAA to enable westflow departures from the Oakland Airport engaged in a departure climb over or west of the San Francisco International Airport to gain altitude as steeply as practicable, and to refrain from the imposition of avoidable altitude restrictions during that climb.

Reference: Topic II-5(c)(3) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-35)

Official Position and Recommendation. 8(4).

ON-GOING

Urge the mass transit authorities in the San Francisco Bay Area to enable East-Bay passengers to reach the San Jose Municipal Airport speedily, conveniently, and with a minimal expenditure of energy by closing the BART gap between Fremont and San Jose, so that the noise impingement on the City of San Bruno produced by Oakland-to-San Jose transbay flights can be eliminated.

Reference: Topic II-5(c)(4) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-36)

Official Position and Recommendation: 8(5).

ON-GOING

Urge the FAA to develop safe and practicable southbound and southeast-bound routes from the Oakland Airport over the water of the San Francisco Bay.

Reference: Topic II-5(c)(5) of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-37)

**M. A. G. CONSULTANTS, INC.**

**Part Four: Concorde Supersonic Transport Airplanes.**

**Policy 9**

Help prevent the use of any airport runway in the San Francisco Bay Area by current production-model Concorde Supersonic Transport Airplanes (SST) or any other SST that is not certificated in accordance with requirements of FAR 36 for subsonic airplanes.

**Recommendation 9(1).**

**ON-GOING**

Urge the regional agencies involved in transportation planning or in a clearinghouse function relative to the approval of federal funds for airport facilities to maintain and support the position taken by ABAG in the Regional Aviation Plan of 1972, namely, that SST airplanes not certificated in accordance with the requirements of FAR 36 for subsonic airplanes shall not be admitted to airports in the San Francisco Bay Area.

**Recommendation 9(2).**

**ON-GOING**

Urge the Airports Commission of the City & County of San Francisco to maintain and support the position previously established by a resolution of the Airports Commission, namely, that SST airplanes not certificated in accordance with the requirements of FAR 36 for subsonic airplanes shall not be admitted to the San Francisco International Airport.

**Recommendation 9(3).**

**ON-GOING**

Urge the Board of Port Commissioners of the City of Oakland to adopt a formal resolution, pursuant to which SST airplanes not certificated in accordance with the requirements of FAR 36 for subsonic airplanes shall not be admitted to the Metropolitan Oakland International Airport.

**Recommendation 9(4).**

**ON-GOING**

Urge the Administrator of the Federal Aviation Administration, the Secretary of Transportation, the Civil Aeronautics Board, and the United States Congress to make any decision (whether favorable or unfavorable) regarding the operation of current production-model Concorde SST airplanes at any airport in the United States contingent on an express prohibition of the use of any runway in the San Francisco Bay Area by any supersonic airplane that is not certificated in accordance with the requirements of FAR 36.

(continued)

**M. A. G. CONSULTANTS, INC.**

Part Four: Concorde Supersonic Transport Airplanes (continued).

Recommendation 9(5).

ON-GOING

Enlist the support of other municipalities in the Central and Southern San Francisco Bay Area for the Recommendations 9(1) through 9(4) made hereinabove.

Reference: Topic II-5(d) (Page II-37) of "A Plan for Reduction of Noise-Exposure Levels ....."

**M. A. G. CONSULTANTS, INC.**

GOAL III

ADOPTION OF A CITY BUILDING  
NOISE-INSULATION ORDINANCE.

Policy 1.

Adopt a City Noise-Insulation Ordinance for Dwellings.

Program 1(1).

SHORT RANGE

Adopt a Noise-Insulation Ordinance consistent with Title 25, Section 1092, of the California Administrative Code.

Program 1(2).

SHORT RANGE

Consider the inclusion of the energy-conservation provisions of said Section 1092 in the Noise-Insulation Ordinance, thereby broadening it into an Energy and Noise Insulation Ordinance.

Program 1(3).

SHORT RANGE

Consider an amplification of the Noise Insulation Ordinance (or Energy and Noise Insulation Ordinance) beyond the scope of current State Law, with regard to two alternatives, namely:

1. Inclusion of single-family dwellings which are constructed as part of a subdivision requiring a final subdivision map and which are located within a high-exposure area. (A sample draft is attached to Exhibit II-2 of Section II: "A Plan for Reduction of Noise-Exposure Levels...")
2. Inclusion of all detached single-family dwellings.

Program 1(4).

SHORT RANGE

Publish a simple booklet to assist individual builders of single-family detached dwellings to achieve noise reduction and cooling-and-heating energy reduction at the least cost.

Reference: Topic IV-1 of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-41)

Program 1(5).

SHORT RANGE

Consider the establishment of noise-insulation requirements for non-residential buildings, such as office buildings, schools, institutional buildings of all kinds, and industrial plants.

Reference: Topic IV-2 of "A Plan for Reduction of Noise-Exposure Levels..."  
(Page II-41)

(continued)

**M. A. G. CONSULTANTS, INC.**

**GOAL III (continued)**

Official Position and Recommendation. 1(6).      SHORT RANGE

Make recommendations to school authorities relative to noise-insulation requirements for existing and proposed schools, with particular reference to the Belle Air School.

Program 1(7).      LONG RANGE

Establish a requirement that all proposed buildings that are to be located in a band 4,000 feet wide, centered upon a straight line midway between the centerlines of Runways 28 at the San Francisco International Airport,\* must be free of structural elements that have a proper vibrational frequency of 100 Hz or less.

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\* Said straight line being defined by the Radial 281 of the San Francisco VOR.

## M. A. G. CONSULTANTS, INC.

### GOAL IV.

#### ABATEMENT OF UNNECESSARY NOISE FROM RAILROAD LINES.

##### Policy 1.

Assist in achieving the compliance by all concerned with noise-emission standards for locomotives and other equipment of interstate railroads set by the Environmental Protection Agency and other agencies of the Federal Government and the State of California.

###### Official Position and Recommendation. 1(1).

###### ON-GOING

Enlist the co-operation of the railroad operators to attain the following objectives:

1. Satisfaction of Federal standards by rolling stock.
2. Maintenance of roadbed, rail joints, switches, etc., to avoid excessive wheel-to-rail-to-roadbed noises and vibration.
3. Minimal use of acoustical signals that can be heard over an unnecessarily large area.

Reference: Topic I-5 of "A Plan for Reduction of Noise-Exposure Levels . . ."  
(Page II-9)

##### Policy 2.

Participate in all deliberations by decision-making bodies on future extensions of rail transit lines through San Bruno.

###### Official Position and Recommendation. 2(1).

###### ON-GOING

CNEL not to exceed 65 dB through horizontal or vertical separation from existing noise-sensitive land uses, and/or roadbed shielding.

Reference: Topic II-2(b) of "A Plan for Reduction of Noise-Exposure Levels . . ."  
(Page II-19)

##### Policy 3.

Reduce noise impact attributable to tightly turning trains on Bayshore Circle.

###### Official Position and Recommendation. 3(1).

###### MIDDLE RANGE

Urge the railroad operator to explore the feasibility of the two mitigating measures:

1. Reverse sense of motion on Huntington Avenue instead of turning on Bayshore Circle.
2. Install rail greasers on Bayshore Circle to eliminate wheel screech.

Reference: Topic II-2(a) of "A Plan for Reduction of Noise-Exposure Levels . . ."  
(Page II-19)

**M. A. G. CONSULTANTS, INC.**

**GOAL IV. (continued)**

**Policy 4.**

Consider the possibility and advisability of the construction of noise barriers along selected segments of existing railroad lines within the City of San Bruno.

**Program 4(1).**

**LONG RANGE**

Initiate a program for the detailed investigation of acoustic needs and effectiveness, aesthetic aspects, cost and possible security problems of noise barriers along selected segments of the main railroad lines and the Bayshore-Circle turn-around.

**Reference:** Topic III-2 of "A Plan for Reduction of Noise-Exposure Levels...."  
(Page II-40)

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**M. A. G. CONSULTANTS, INC.**

**GOAL V.**

**INCLUSION OF NOISE CONSIDERATIONS IN  
ALL FUTURE LAND-USE DECISIONS.**

**Policy 1.**

Establish guidelines to assist the Planning Department in making staff proposals for future land-use decisions, and to assist the Planning Commission and the City Council in evaluating them.

**Program 1(1).**

**SHORT RANGE**

Perform a survey and an identification of those existing facilities and activities within the City which emit abatable noise, and an identification of sources of noise that appear unabatable.

**Program 1(2).**

**SHORT RANGE**

Compile an inventory of current land uses that are deemed to be incompatible with existing unabatable noise sources.

**Program 1(3).**

**MIDDLE RANGE**

Prepare a chart of potential land uses that would be compatible with existing unabatable noise sources, assuming all abatable noise sources to be suppressed sufficiently to render such potential land uses compatible.

**Program 1(4).**

**MIDDLE RANGE**

Prepare a chart of potential land uses that would be compatible with all existing noise sources, whether or not they are abatable.

**Program 1(5).**

**SHORT RANGE**

Review and examine existing zoning in (a) the Belle Air Area; (b) the triangle comprised between Herman Street, Huntington Avenue and Tanforan Avenue; and (c) the rectangle bounded by San Bruno Avenue, El Camino Real, Interstate Route 380, and Huntington Avenue, in the light of current noise-exposure levels from aircraft departing from Runways 28 at the San Francisco International Airport, and in the light of the possible attainment of improvements on Runways 01 at the Airport.

**Program 1(6).**

**SHORT RANGE**

Develop and adopt guidelines for the Planning Commission and the City Council relative to the evaluation of noise-exposure-level aspects of future applications for zoning, re-zoning, planned-development approvals, precise-plan approvals, and building permits.

**Reference:** Topic V of "A Plan for Reduction of Noise-Exposure Levels . . ."  
(Pages II-12 & -13).

**M. A. G. CONSULTANTS, INC.**

**GOAL VI**

**ABATEMENT OF UNNECESSARY NOISE FROM MISCELLANEOUS SOURCES.**

**Policy 1.**

Enforce Federal and State Noise Standards for all miscellaneous sources of noise in the City.

**Program 1(1).**

**MIDDLE RANGE**

Establish a citizen's task force for the detection and identification of objectionably intense noise sources.

**Program 1(2).**

**MIDDLE RANGE**

Establish a procedure to verify violations and achieve and certify corrections.

**Reference:** Topic I-4 of "A Plan for Reduction of Noise-Exposure Levels . . ." (Page II-8) —

## M. A. G. CONSULTANTS, INC.

### GOAL VII.

#### ABATEMENT OF UNNECESSARY NOISE FROM INDUSTRIAL PLANTS.

##### Policy 1.

Reduce noise emanating from industrial plants or shield the community against such noise.

##### Program 1(1). MIDDLE RANGE

Obtain regular surveys of community noise attributable to industrial sources by citizen's noise task force.

##### Official Position and Recommendation. 1(2). SHORT RANGE

Enlist the co-operation of existing industrial plants to abate noise at the source or to set up protective noise barriers around prominent noise sources.

Reference: Topic I-6 (Page II-10) and Topic III-3 (Page II-40) of "A Plan for Reduction of Noise-Exposure Levels ...."

##### Official Position and Recommendation. 1(3). SHORT RANGE

Enlist the co-operation of existing industrial plants to replace the bull-horns, paging loudspeakers, and miscellaneous noisy horns and whistles, with acoustical signals that are audible only by those for whom the signal is intended.

Reference: Topic I-6 of "A Plan for Reduction of Noise-Exposure Levels ..." (Page II-10)

##### Policy 2.

Protect the people of San Bruno against intrusion of industrial noise from outside of San Bruno.

##### Official Position and Recommendation. 2(1). SHORT RANGE

Request that Noise Elements of adjacent cities and Environmental Impact Reports and Statements of projects proposed therein describe and disclose fully any significant noise impact on the City of San Bruno.

##### Program 2(2). SHORT RANGE

Respond to EIR's and EIS's with critique and constructive recommendations for noise-mitigating measures, and move their adoption before the respective decision-making bodies.

Reference: Topic II-4 of "A Plan for Reduction of Noise-Exposure Levels ..." (Page II-21)

**M. A. G. CONSULTANTS, INC.**

**GOAL VII. (continued)**

**Policy 3.**

Make the issuance of building permits for industrial plants contingent on an assurance that operation of the proposed plant will not increase excessively the annual exterior CNEL at the nearest residential site.

**Program 3(1).**

**MIDDLE RANGE**

Require, by ordinance, that plan approvals and building permits for new industrial plants within the City be made contingent on a certified assurance that the proposed facility will not cause the total annual CNEL in any existing owner-occupied dwelling to rise above 65 dB, or more than 3 dB above the CNEL prevailing there at the time of the application, whichever is lower.

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## **M. A. G. CONSULTANTS, INC.**

### GOAL VIII.

#### **PROTECTION OF NOISE-ABA TEMENT FLIGHTPATHS BY ESTABLISHING HEIGHT LIMITATIONS FOR PROPOSED BUILDINGS AND OTHER STRUCTURES.**

##### Policy 1.

Preserve the existing (fought-for and hard-won) essential and safe noise-abatement flightpaths in the environs of the San Francisco International Airport through the establishment of maximum permissible elevations of proposed buildings and other structures within all of the cities adjacent to the Airport.

##### Program 1(1).

LONG RANGE

Cause Planning Staff and Consultants to draw and define with specificity a vertical planning boundary, comprising specified sloping planes, horizontal planes, and height-above-ground limits for the guidance of planners, developers, and architects throughout the City of San Bruno, and submit the draft proposal to the City Planning Commission, together with an environmental impact assessment report.

##### Official Position and Recommendation 1(2).

LONG RANGE

Enlist the co-operation of the other cities adjacent to the San Francisco International Airport, the Airport Land Use Committee of the County of San Mateo, the Management of the San Francisco International Airport, the air carriers and airline pilots and fixed-base operators operating thereat, the Federal Aviation Administration, the Environmental Protection Agency, and the public, to participate in the drafting and definition of said vertical planning boundary within which buildings and other structures can be constructed safely without interfering with the safe and efficient flight of aircraft engaged in noise-abatement departure and approach operations.

(See Pages II-45 and II-46)

**M. A. G. CONSULTANTS, INC.**

GOAL IX.

PROTECTION OF NOISE-ABALEMENT FLIGHT PATHS  
BY CONTROLLING LIGHT SOURCES AND LIGHT REFLECTIONS  
WITHIN THE CITY TO AVOID DISORIENTATION OF PILOTS.

Policy 1.

Establish, by ordinance of the City Council, building-code regulations that prohibit the erection or operation of any object that could cause a pilot engaged in a noise-abatement climb or descent to become disoriented either by emission or by reflection of light.

Program 1(1).

LONG RANGE

Draft an ordinance that would enable the City to require that proposed buildings or other structures in the City be so designed and constructed that there be no objectionable reflection of the light of the sun toward an aircraft engaged in a straight-in final approach toward a landing at the San Francisco International Airport, or an aircraft engaged in an initial straight climb following takeoff at the said Airport.

Program 1(2).

LONG RANGE

Draft an ordinance that would enable the City to prohibit the erection or operation of an object which directs a steady light or a flashing light of objectionable intensity, other than an FAA-approved navigational signal light or the like, toward an aircraft engaged in takeoff and approach operations as above defined.

Reference: Page II-47.



## **Section II**

### **A Plan for Reduction of Noise-Exposure Levels In the City of El Paso**



# M. A. G. CONSULTANTS, INC.

## A PLAN FOR REDUCTION OF NOISE-EXPOSURE LEVELS IN SAN BRUNO. 1975.

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A PLAN FOR REDUCTION OF  
NOISE-EXPOSURE LEVELS IN SAN BRUNO

INTRODUCTION

It is characteristic of man to seek to abate noise that is in excess of the "natural" noise level of an open rural countryside and to take measures to suppress any noise that intrudes upon him at a level that exceeds the noise level created by him within his own homelife or activities and his verbal communication with others.

The acoustical profession, the State of California, and the United States Environmental Protection Agency (EPA) have found that man, in his total daily noise exposure to all kinds of outdoor and indoor noises, is fully comfortable generally with a community noise equivalent level (CNEL)\* of up to 55 decibels (dB). In fact, man's own self-generated "home-life noise levels" in residential quarters can approach or even exceed 55 dB.

In an exterior ambient pervaded by aircraft noise, with its particularly disturbing or irritating character, man is amenable in general to a CNEL or an  $L_{dn}$  \*\* attributable to aircraft noise of 65 dB as a CNEL limit for detached single-family dwellings in an urban area with some seasonal "outdoor living." In his overall activity, in which man has surrounded himself with self-created noisy machines for transportation, office work, industrial production, and recreation, man has conditioned himself to tolerate a total exterior annual CNEL or  $L_{dn}$  of up to 70 dB or more outside of his own dwelling.

In the City of San Bruno the total annual exterior CNEL, on the whole, exceeds 55 dB. The few exceptions are sheltered areas of gardens, yards, and cul-de-sacs. In some areas of the City of San Bruno, the prevailing CNEL has been observed to exceed 65 dB. There are some areas in the City of San Bruno where the exterior CNEL contributed by aircraft noise or aircraft-engine noise occasionally exceeds 65 dB.

With appropriate measures of noise abatement by which aircraft activities and aircraft-engine operations are controlled properly, no residential area in San Bruno need be exposed, now or ever, to aircraft noise-exposure levels in excess of annual CNEL of 65 dB. This objective can be readily achieved without stifling any legitimate activity at any airport in the San Francisco Bay Area or within the airspace of the San Francisco Bay.

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\* CNEL as defined in Title 4, Subchapter 6, Section 5006(f), of the California Administrative Code.

\*\*  $L_{dn}$ , the EPA-adopted Day-and-Night Equivalent Noise Level, which bears a slightly different set of weighting factors than the CNEL, differs less than 1 dB from the CNEL.

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It is appropriate that the City of San Bruno take specific steps, such as those suggested hereunder, to attain a reduction of noise-exposure levels for the protection of its citizens and residents. None of the specific steps that are suggested herein, or alternate steps that might be deemed practicable to achieve the same end, will exert a significant adverse impact on people or cities within or without the City of San Bruno.

### Five Avenues of Noise-Impact Mitigation.

The City of San Bruno needs to explore and to pursue the following five specific means of achieving noise-impact mitigation in the City:

- I. Quieting the Noise at the Source.
- II. Removing the Source of the Noise From the Recipient of the Noise.
- III. Barring the Path of the Noise From Its Source to the Recipient.
- IV. Shielding the Recipient of Noise Within His Dwelling or Place of Work.
- V. Avoiding the Placement of Potential Recipients of Noise into the Impact Area of Unavoidable, Unabatable, Irremovable Noise.

In some instances, noise-abatement activities may pertain to more than one of these categories or avenues of noise-impact mitigation.

### The Principle of Mutuality in Noise-Impact Mitigation.

### The Fundamental Concept of Control of Noise.

The present Noise Element is based on the concept that the production and spreading of injurious noise is an undesirable intrusion by one man into the life sphere and surroundings of another, and that injurious noise is not to be permitted.

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### Past and Future Efforts.

The City of San Bruno and many others have done much and can do even more to reduce the noise burden on citizens and residents of the City, in each of the five afore-cited categories of amelioration.

### Co-operation of Others.

The City of San Bruno and its citizens and residents need to enlist the co-operation of others outside of the City to render their own efforts meaningfully effective. In this respect the City of San Bruno enjoys broad support for this endeavor from many of its friends and neighbors of goodwill.

### No Shifting of a Significant Noise Burden on Others.

Much of the present noise exposure in the City of San Bruno is attributable to activities that are generated from outside the City. In its endeavor to reduce its own noise burden, the City of San Bruno must at all times be mindful that relief from noise to its citizens and residents should not find remedy by shifting a significant noise burden, or a substantially equivalent significant noise burden, onto people elsewhere.

### No Significant Constraint on Legitimate Personal or Commercial Activities.

There are no known noise problems affecting the City of San Bruno which cannot be abated without depriving anyone from the exercise of legitimate activities. There is no known excessively noise-emitting activity that cannot be performed to a like extent, or with equal or greater efficiency, without inflicting excessive noise on San Bruno.

Noise abatement for the City of San Bruno does require that, when an activity can be performed either with excessive noise or without excessive noise, such activity be carried out without excessive noise. This requirement may warrant a need for discipline over the manner in which an activity is performed, but does not exact a constraint over the scope of that activity. To this co-operation the City of San Bruno is clearly entitled.

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### 1. QUIETING THE NOISE AT THE SOURCE.

It is acknowledged from the outset that Federal and State regulations are currently reducing, and can be expected to reduce further, the certificated limit of noise emitted by individual automotive vehicles on land and on the water, and by aircraft. Federal, State, and local regulations exist or are in the making to curb any excessive noise produced by improper operations of vehicles and aircraft. Consequently, it should not be assumed that future automotive vehicles, or aircraft, as manufactured and placed in service, will be noisier than, or even as noisy as, those manufactured and placed in service in the past, and San Bruno should not permit any future increase in noise-exposure levels in the City.

Federal or State law cannot be all-comprehensive. The eye or ear of Federal or State Law cannot see, hear, or detect all the noise that is objectionable. Hence, the City of San Bruno can and must protect its citizens and residents by implementing at least the following policies, a description of each of which is preceded by a summary of background information from the body of the technical report in the present Noise Element. It is believed that the scope of each of the suggested policies is not preempted by Federal or State Law.

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Topic I-1. Establishment of an Environmental Standards Section in the Engineering Department and a Noise-Abatement Enforcement Unit in the Police Department of the City of San Bruno.

### Recommendation.

The City of San Bruno should establish an Environmental Standards Section in the Engineering Department of the City of San Bruno for the purpose of surveying continually the noise environment of the City and the people of San Bruno and for the purpose of providing engineering assistance to city departments and citizens of the City of San Bruno who are in need of specialized advice in the field of noise abatement (as well as in other fields of environmental problems).

The City of San Bruno should establish a Noise Abatement Unit in the Police Department. The Noise Abatement Unit should be assigned three principal responsibilities:

1. To identify vehicles that appear to violate noise-emission standards established by the California Vehicle Code.
2. To verify the noise levels produced by vehicles so identified under controlled conditions, with the assistance of the above-proposed Environmental Standards Section of the City Engineering Department.
3. To require the correction of any defect found under controlled conditions and the certification of compliance by the above-proposed Environmental Standards Section of the City Engineering Department.

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### Topic I-2. Reduction of Noise Emissions From Heavy Passenger Buses.

#### Background Information.

Bus services within the City of San Bruno employ, in part, coaches that are powered by highly efficient, but relatively noisy, gasoline and Diesel engines.

#### Recommendation.

The City of San Bruno should enlist the co-operation of all present and future bus operators to achieve two needed improvements:

1. Reduction of noise emission from gasoline- and Diesel-powered engines of current and soon-to-be-introduced coaches by:
  - (a) the use of sound-absorbing materials in the engine compartments, and
  - (b) improved exhaust mufflers.
2. Introduction of electric trolley coaches on routes on which the headway between successive coaches is sufficiently close to render the installation of a trolley-coach system economically feasible and advantageous.

The City of San Bruno should also examine the following two possibilities:

3. Placement of bus stops at least 150 feet downstream of each school site, so that the heaviest braking and accelerating noises do not occur in front of the school or directly across the street.
4. Consideration of the avoidance or removal of traffic signals, other than signals synchronized for constant-speed traffic flow from intersections at which schools are located, and restriction of traffic flow on cross streets thereat.

### Topic I-3. Purchase of Quiet Vehicles and High-Quality Maintenance for City-Owned Vehicles.

The City of San Bruno should establish noise criteria for the evaluation of vehicles, such as police vehicles, trucks, and specialized vehicles for street cleaning and maintenance, prior to purchase by the City..

Verification at regular intervals of the actual noise performance of such vehicles should be established as a mandatory part of the routine maintenance schedule.

Maximum noise-level specification tolerances should be established to determine the need for repair or replacement of a component that has become excessively noisy in service.

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### Topic I-4. Reduction of Noise Emissions From Miscellaneous Sources.

#### Background Information.

There are numerous sources of noise which vary in nature and in recurrence, that evoke criticism and complaints from residents. An all-inclusive description and comprehensive classification of such noise sources is neither feasible nor useful; a new source may arise today or tomorrow. Continual vigilance by the City and its citizenry can help to detect and suppress annoying sources.

A typical example is the collection of garbage. The problems are basically three in number:

1. Impact noises from the handling of the cans;
2. The noise produced by the operation of the truck in motion and by the operation of conveyer mechanisms within the truck;
3. The scheduling of garbage collection in the early morning hours.

#### Recommendation.

The City of San Bruno should establish a task force consisting of citizens to make preliminary investigations of apparent miscellaneous sources of noise and seek to arrange for voluntary noise abatement at the source.

The proposed noise-abatement unit in the Police Department of the City of San Bruno should be assigned the responsibility of enforcing existing Federal noise standards for miscellaneous sources of noise, in addition to those already mentioned, such as the following:

1. Construction equipment.
2. Waste-disposal services.
3. Motor vehicles off the public streets.
4. Stationary machinery and equipment.
5. Mechanical repair activities.
6. Powered model vehicles.
7. Miscellaneous transient noises from ground-based sources.

The Police Department should identify apparent violators. Technical support for such enforcement activities and certification of compliance by a violator with required corrective actions should be supplied by the Environmental Standards Section of the City Engineering Department.

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### Topic I-5.      Noise Abatement on Railroad Lines.

#### Background Information.

Noise-emission standards for locomotives and other equipment of interstate railroads are the subject of recent actions by the Environmental Protection Agency under the Federal Noise Control Act of 1972.

#### Recommendation.

The City of San Bruno should enlist the co-operation of the Southern Pacific Transportation Company to ensure that the rolling stock meets Federal standards.

The City of San Bruno should survey the existing trackage in the City, and request the railroad operator to maintain roadbeds, rail joints, switches, intersection components, and miscellaneous equipment in such condition as to avoid excessive wheel-to-rail-to-roadbed noises and vibrations.

The City of San Bruno should ask the railroad operator to reduce the use of train-borne acoustical signals to a legally necessary minimum and to transfer at least part of their function to light signals and to low-intensity acoustical signals installed near ground level at grade crossings.

Topic I-6.      Noise Abatement at the Major Industrial Plants.

Background Information.

Many major industrial plants emit a substantial amount of noise, some of which impinges on residential areas, especially in calm weather conditions, in the presence of an intense temperature inversion. Some of that noise can be abated.

While it is recognized that the use of impact tools is an important part of the construction and repair business of many industrial facilities, the attendant noise emissions could be controlled by the setting up of noise-absorbing work-area barriers and shieldings.

Another source of high-intensity sounds is the occasional use of extremely loud bullhorns or paging-loudspeakers at some plants, at any hour of the day or night.

Recommendation.

The City of San Bruno should enlist the co-operation of all of the industrial plants in the City to achieve a noise reduction at the source, or the setting up of local protective noise barriers that would protect people in San Bruno without reflecting undue noise into the residential areas of neighboring cities.

The plant operators should also be asked to install a network of low-intensity paging devices, or install the universally used system of personal radio-paging devices, and to assign to a high-intensity loudspeaker network emergency functions only.

Topic I-7.      Noise Abatement at Facilities Where Aircraft Engines  
Are Subjected to Sustained Test Runups on the Ground.

General Information.

Aircraft engines emit intense noise in connection with repair and maintenance activities on the ground. There are essentially two sets of circumstances in which engines need to be run up while on the ground, as follows:

1. Off-aircraft: In test cells, following a major engine overhaul;
2. On-aircraft: Primarily for the purpose of so-called "engine-trim" adjustments.

In general, off-aircraft test cell runs last longer, for one or several tens of minutes;

on-aircraft "trim" runs usually require but a few minutes, but on occasion they, too, may last ten to twenty minutes.

Test cells can be quieted by suitably designed noise-suppressor structures, appropriately located and oriented.

The noise impact of engine runups "on-aircraft" can be minimized by the use of stationary or mobile noise suppressors, and by placing the aircraft at a suitable location and orienting it so that either distance, or the shielding effect of an obstacle, or both, serve to diminish the impingement of noise on a noise-sensitive area.

There are two major groups of engine ground-runup and test activities at the San Francisco International Airport that can and do affect the City of San Bruno, namely:

- (1) The permanent test-cell installations at the factory-like maintenance facilities of United Airlines and others;
- (2) On-aircraft engine runup activities by airlines for which the Airport is an important turn-around terminal.

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### Topic I-7(a). Test-Cell Engine-Runup Facilities.

#### Background Information.

United Airlines has developed, procured, and constructed a variety of engine-testing and ground-run facilities, and has constructed and used effective noise-suppressing test cells for aircraft engines. Test-cell operations are virtually continuous. With increasing effectiveness of heavy structural noise suppression in and around the test cells, complaints from citizens and even an awareness by citizens of test-cell operations appear to have decreased to near-zero. Ordinarily, test-cell noise merges with the ambient within 1/2 mile.

There remains, however, a continuing need to decrease the radiation of test-cell noise still further in a westward and northwestward direction. The need may arise occasionally, especially during calm-weather conditions, in the presence of an intense temperature inversion, when noise levels from any major source appear to prevail unabated up to the hillsides. Residents generally appear to tolerate the gentle din as emanating from "unavoidable airport operations," but a further decrease of such sound levels is desirable, because it would contribute further to the quiet livability of the City, especially at night. The engineering task of developing additional shielding devices for test cells, in this instance, is facilitated by the absence of any noise-sensitive areas east of the Airport, toward which sound may be reflected without inflicting harm on others.

#### Recommendation.

It is recommended that the City of San Bruno support and encourage the on-going effort of United Airlines and others at the Airport to hold to a minimum the noise emitted by aircraft engines during test-cell runs. The City of San Bruno should enlist the co-operation of the operators of engine test cells, as well as the Airport Management, in verifying, from time to time, the noise-suppression effectiveness of existing test cells, and in improving further the noise reduction afforded by the existing test cells and any new test cells. The City of San Bruno should urge test-cell operators and the Airport Management to perform noise-level verifications not only at close range (250 feet) where noise levels may be relatively low, but also at distances of 2,000 to 5,000 feet, especially in "echo-chamber-like" weather conditions with little wind and a sharp temperature inversion.

It appears, from preliminary data, that Test Cell No. 5, currently under construction at the UAL facility, will in fact decrease the total test-cell noise radiation to less than that of the comparably large Test Cell No. 4 alone. Test Cell No. 5 employs the sound-absorbing Helmholtz-resonator configuration developed by the NYBY manufacturing firm and already tested at the Schiphol Airport in Amsterdam, Holland.

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### Topic I-7(b). On-Aircraft Engine Ground Runs.

#### Background Information.

Continued fuel shortages and spiraling fuel costs have caused several airlines operating at the San Francisco International Airport (SFIA) \* to adopt a procedure originally developed by the Engineering Department of United Airlines in 1973, that eliminates virtually all high-power engine runs during engine trimming on the ground. In addition, the procedure significantly reduced the time required to complete an engine trim.

Flight crews obtain engine data at a fixed throttle setting during normal cruise operations. The amount of any needed adjustment of the fuel-control trim screw can then be determined from a chart, and no more than ten minutes (excluding the time required for the throttle-cable rig check) is required for the trim-screw adjustment and an idle run to trim the engine correctly. Engine runs on the ground by airlines using an in-flight trim-check procedure have become infrequent and are limited to needs arising from unforeseen engine replacements and fuel-control repairs. Those airlines which do not use the in-flight trim-check procedure still require substantial maintenance-related ground runs of engines.

At the SFIA, high-power jet engine runups have been limited to daytime, with no sustained runups at night. The Airport has established a curfew for engine runups from 10:00 p.m. to 7:00 a.m. The only limited trim runs permitted are those for aircraft required for early-morning scheduled takeoffs. Authorization must be obtained from the Airport Management for each runup, and a record of each runup is kept by the FAA Control Tower. Runups are directed to be performed at a remote location on the Airport, near the thresholds of Runways 19, with the exhaust stacks pointing toward the San Francisco Bay. Even the operation of aircraft-borne auxiliary power units (APU's) in terminal and maintenance areas has been limited sharply by regulations enforced by the SFIA and the Sound Abatement Center.

Yet, from time to time, citizens complain about engine runup noise, especially during quiet nights.

SWISSAIR, the national airline of Switzerland, and its Swiss and Japanese contractors, have developed, constructed, and tested an all-purpose noise suppressor for all types of jet aircraft (DC-9 through B-747) other than the large trijets, and another type of noise suppressor for the large trijets (DC-10 and Lockheed 1011). The noise suppressors for on-aircraft engine runs are nearly as effective as the closed test cells for off-aircraft runs. The United States Department of Defense has developed, or has caused to be developed, highly effective noise suppressors for most recent types of naval and other military aircraft.

(cont.)

\* Air California, China Air Lines, Korean Air Lines, PSA, and Western Airlines.

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### Topic I-7(b).    On-Aircraft Engine Ground Runs.

#### Background Information (cont.)

Citizens' complaints indicate that tolerable noise levels by engine ground runs continue to be exceeded from time to time in residential areas of San Bruno.

A 50 dBA exterior noise level in residential areas of San Bruno is regarded as undesirable during nighttime runups of more than one minute's duration. Maximum exterior noise levels during nighttime runups in excess of 55 dBA, attained during fluctuations of noise levels in residential areas in San Bruno, should be regarded generally as sleep-disturbing, "excessive," and as possibly constituting a "problem," if they occur at frequent intervals, less than fifteen minutes apart for a total of one half-hour period during one night.

#### Recommendation.

It is recommended that the City of San Bruno support and encourage the on-going effort of the members of the Sound Abatement Center (the SFIA, airlines, etc.) to hold to a minimum the noise emitted by aircraft engines during stationary runs on the ground.

The City of San Bruno should enlist the co-operation of all of the airlines toward the uniform adoption of in-flight trim checks and the reduction of any trim runs on the ground to an idle run, in the manner prescribed by United Airlines for its own operations and already emulated by some other airlines. The City of San Bruno should also enlist the co-operation of the SFIA toward an encouragement of all airlines to limit the extent of ground runs through the use of in-flight trim checks.

The City of San Bruno should enlist the co-operation of the SFIA and the airlines toward the acquisition or construction of a noise-suppressor facility, preferably located east of the American Airlines B-747 hangar, that could be used by all participating airlines. Such a facility should be regarded as a necessary adjunct to the Airport Expansion Project currently underway, and as a phase thereof that is needed to make the expansion viable through a significant mitigation of the environmental impact of the airport on its environs.

The City of San Bruno should enlist the co-operation of the Sound Abatement Center by having the City Planning Staff informed, at regular intervals (perhaps four times a year), just how the abatement of engine ground-run noise at the SFIA is progressing.

II. REMOVING THE SOURCE OF THE NOISE.

Topic II-1. Street and Traffic Noise.

Background Information.

San Bruno is a city in which space is limited. Virtually all of its important traffic arteries are bordered, at least in part, by some noise-sensitive residential areas. It is evident that a great deal of study and planning has already gone into the development of at least two major east-west arteries and approximately four north-south traffic arteries. The present noise study has identified an additional need, namely, the problem of noise, which should be taken into consideration in identifying less noise-sensitive routes, especially for heavy commercial truck traffic. An additional need is for the selection of adequate setbacks of building lines and the possible terracing or staggering of two-story and multi-story dwellings along some streets.

a. Noise compatible Truck Routes.

The present noise study foresees the general suggestion that less noise-sensitive routings be created for truck arteries in San Bruno which, at present, penetrate and cross business and residential areas to the detriment of both. It is evident that no simplistic recommendation will suffice; past planning has accomplished much to concentrate truck traffic in designated industrial areas and along special truck routes; only a full study combining traffic engineering and noise analysis can help to avoid the remaining avoidable transition of noisy trucks through residential and business areas.

b. Airport-Access Traffic.

The San Francisco International Airport is the main Regional Airport for the San Francisco Bay Area. In a world of diminishing fuel supplies and increasing operating costs, its present pre-eminence ensures its continued pre-eminence. The airlines have found that even a major metropolitan area can support no more than one dominant full-service airport at which "good service" (that is, sufficiently frequent flights over a given route segment) can be assured with high efficiency (that is, with airplanes sufficiently large and equipped with fuel-saving high-bypass-ratio engines).

Available technology permits the delivery of about twice the number of passenger-miles and/or cargo ton-miles for a given amount of fuel as has been delivered up to the present time. Even with the likelihood that aviation jet-fuel supplies will decrease between now and 1985, it is reasonably predictable that the annual passenger volume of the San Francisco International Airport may rise from its present 17 millions to a high of about 24 million to 28 million before the ultimate draining of short-distance air passengers by

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### Topic II-1. Street and Traffic Noise. (cont.)

more fuel-efficient surface rail vehicles is expected to decrease the total annual passenger volume and increase the average trip length of the diminishing number of air passengers at the airport. All of this is based on the assumption that aviation continues to consume liquid fossil fuels only.

Unless the increasing number of SFIA passengers is carried by collective means of public transit to and from the Airport, the expanding volume of airport access by private automobiles could create a number of adverse environmental impacts, not the least of which is noise.

Unavoidably, the noise impact from increasing automotive airport-access traffic on Bayshore Freeway, Interstate Route 280, and the Interstate Route-380 connector would fall upon San Bruno. Of these routes, the Route-380 connector would, of necessity, create the heaviest "new" noise impact on the downtown residential area of San Bruno.

In addition to this foreseeable direct effect, however, the increasing congestion on the major freeways would induce individual drivers, both private and commercial, to take refuge on minor State highways, for example, Routes 82, El Camino Real, and 35, the Skyline Boulevard, and finally collector streets and residential feeder parallels.

There is little doubt that, if airport-access traffic on the major freeways increases substantially from now on, the traffic on San Bruno Avenue will resume once again its present growth and, most likely, will also resume its present tendency to spill automotive and truck traffic on streets as remote and non-arterial as, for example, Euclid Avenue.

The noise impact of the secondary and tertiary diversion of traffic on streets such as San Bruno Avenue, San Mateo Avenue, and other minor arterials, and from there to residential streets, could be even more severe for the community in San Bruno than the noise impact emanating from the existing freeways. This impact, of course, would be in addition to the major new noise impact resulting from the elevated portions of Interstate Route 380.

#### c. Adequate Setback of the Building Line.

#### d. Terracing or Staggering of Two-Story and Multi-Story Dwellings.

While many dwellings in San Bruno are set back from the property line, others are close to the nearest traveled way. Many two-story and multi-story buildings in the City of San Bruno are terraced toward the rear only, while the street-side facade rises to the full height of the respective building.

A small setback exposes the dwellings to a close-up impingement of the street noise. A lack of terracing on the street side exposes each story to the same full measure of street noise, story by story, whereas in a terraced building each lower story may offer a measure of noise protection to the upper stories.

## M. A. G. CONSULTANTS, INC.

### Topic II-1. Street and Traffic Noise. (cont.)

#### Recommendation.

##### II-1(a) Noise-Compatible Truck Routes.

The City of San Bruno should re-consider the possible need for one or more truck arteries to drain trucks away from currently apparent "no-alternative" routes by which trucks wind their way through noise-sensitive areas.

Without wishing to trespass into the area of traffic engineering, it is suggested that arterial connectors such as the following could serve to decrease noise levels produced by transiting trucks in noise-sensitive areas:

1. Connectors between Sneath Lane in San Bruno and Maple and Tanforan Avenues in South San Francisco.
2. A connector tying Huntington and San Antonio Avenues in San Bruno with California Drive in Burlingame.

Improvements such as those exemplified by the above two suggestions should be coupled with limitations placed on the use of San Bruno Avenue and the downtown portion of San Mateo Avenue by transiting trucks.

Consideration should be given to the possible limitation of truck traffic on Interstate Route 280. It may be necessary to examine separately the route segment south of the Junction with Interstate Route 380 and the route segment north of the Junction.

The use of Crystal Springs Road by trucks should be reviewed and perhaps curtailed. Truck traffic on Crestmoor Drive should be discouraged.

The noise impact of augmented (and accelerated) traffic on Sneath Lane west of Interstate Route 280 should be assessed and, if necessary, controlled.

**M. A. G. CONSULTANTS, INC.**

Topic II-1. Street and Traffic Noise, (cont.)

Recommendation.

II-1(b) Airport-Access Traffic.

The City of San Bruno, either alone or in concert with other airport-riparian cities, the County of San Mateo, and other concerned agencies, should enlist the co-operation of the Airports Commission of the City and County of San Francisco to ensure collective or mass transit access to the Airport of a specified magnitude, to be triggered quantitatively by the attainment of specified annual passenger volumes.

The City of San Bruno should propose the requirement that any excess of passengers over the annual volume of 17 million be accommodated by collective or mass transit carrying them from the Airport to a point beyond the City of San Bruno and that, additionally, a time schedule be instituted to provide collective or mass transit for at least twenty-five percent of the first 17 million annual passengers.

Experience in the City of San Bruno and elsewhere has demonstrated that primary spillage of traffic from major expressways to collector streets, and secondary spillage of traffic from collector streets to residential streets, ultimately results in a popular demand for "gymkhana"-like barricading of entrances and exits of residential streets to protect residents from the increasing noise levels from traffic. The City of San Bruno should protect its citizens and residents by effective actions to prevent the primary spillage of traffic.

## M. A. G. CONSULTANTS, INC.

### Topic II-1. Street and Traffic Noise. (cont.)

#### Recommendation.

##### II-1(c) Adequate Set-Back of the Building Line.

The City of San Bruno should establish supplementary, noise-oriented, criteria for the specification of an adequate set-back of building lines for various types of dwellings from the centerline of the nearest traveled lane (or the curb) as a function of current and projected traffic-noise levels.

#### Recommendation.

##### II-1(d) Terracing or Staggering of Two-Story and Multi-Story Dwellings.

The City of San Bruno should give consideration to the possible terracing or staggering away from the street of upper stories of two-story and multi-story buildings, depending on current and projected traffic noise on a street, as well as other architectural parameters, so that the lower stories of such buildings may serve as noise shields against street noise for the upper stories.

##### II-1(e). Barking and Howling Dogs.

#### Background Information.

Citizens have complained about dogs barking and howling, especially during the night. A distant vehicle or aircraft, the sound of a door or a window closing, the steps of a passer-by, appear to be sufficient to precipitate a general uproar by barking and howling dogs.

Any young dog can be taught, by well-known and conventional humane training methods, to keep from barking unless a stranger intrudes. A trained watchdog does not bark and howl without a good reason.

#### Recommendation.

The City of San Bruno should issue a warning to owners of barking and howling dogs reported by neighbors and, after thirty days, issue citations to owners of repetitive offenders. Thirty days are sufficient to teach any dog to keep quiet, except in a situation when barking is required to raise a bona-fide alarm.

## **M. A. G. CONSULTANTS, INC.**

### Topic II-2. Railroad Noise.

#### II-2(a) Existing Rail Lines.

##### Background Information.

Rail lines in San Bruno run along long-established routes. In general, no less noise-sensitive alternate routes appear to be available.

However, it would be desirable from the point of view of noise impact, to minimize or eliminate the transit of freight trains around the tight turn at North and South Bayshore Circle, where the rumbling noise of the locomotive and the freight cars is further exacerbated by the startling screech of the wheels along the tightly curved track.

##### Recommendation.

The Cities of San Bruno, in conjunction with the City of South San Francisco and the Southern Pacific Transportation Company, should explore the feasibility of alternate track arrangements to enable freight trains exiting from South San Francisco to reverse their sense of motion on Huntington Avenue and then to proceed in the direction of Daly City without making a noisy sharp turn along the Bayshore Circle.

#### II-2(b) Potentially Contemplated New Rail Lines.

##### Background Information.

It appears almost certain that one or more rail transit lines will, within the next five to twenty years, be constructed through the City of San Bruno.

##### Recommendation.

The City of San Bruno should make certain, by its participation in decision-making bodies and its contribution to their deliberations, that future rail transit lines be constructed at sufficient horizontal distances from existing noise-sensitive land uses or, in the alternative, that they be constructed with sufficient vertical separation from existing noise-sensitive land uses (and/or roadbed shielding) to ensure noise exposures of no more than 65 dB CNEL.

## M. A. G. CONSULTANTS, INC.

### Topic II-3. Industrial Noise From Sources Located in San Bruno.

#### Background Information.

Industrial noise in San Bruno emanates primarily from sources long-established in an industrial area of the City. There are no known means for removing such sources still farther away from the recipients of such noise.

Likewise, the industrial noise from factory-like facilities within the city limits of San Bruno in areas contiguous to the San Francisco International Airport cannot be readily moved farther away from recipients of their noise. However, every effort should be made to locate new noisy industrial activities, both large and small, in relatively noise-insensitive areas, or in areas that are separated by existing noise barriers from noise-sensitive areas.

#### Recommendation.

The City of San Bruno should make approvals and building permits for new industrial plants within the city limits contingent on a satisfactory assurance by the proponent that the location, configuration, orientation, and operation of the proposed facility will not cause the total annual exterior CNEL in any existing owner-occupied dwelling to rise above 65 dB, or more than 3 dB above the CNEL prevailing thereat at the time of the application, whichever is lower.

## M. A. G. CONSULTANTS, INC.

### Topic II-4. Industrial Noise From Sources Located Outside of San Bruno.

#### Background Information.

At this time little noise is perceived to come from industrial sources located outside of San Bruno. However, this should not exclude the possibility that some of the industrial areas within nearby cities and the San Francisco International Airport might become sites for additional industrial plants and activities. Any planning therefor should include means and plans for avoidance of anticipated noise.

#### Recommendation.

The City of San Bruno should make appropriate representations to adjacent cities and the SFIA, asking them to prepare and publish legally and substantively adequate Noise Elements for their respective General Plans, together with Environmental Impact Reports (and, where federally funded, Environmental Impact Statements) that describe and disclose fully any significant noise impact on the City of San Bruno, and any part of the City of San Bruno, by industrial plants currently existing in each of said cities and the SFIA, and industrial plants proposed for local approval by said cities or the Airports Commission of the City and County of San Francisco.

The City of San Bruno should then respond with its critique and with constructive recommendations for measures regarded as necessary for the protection of the City of San Bruno and its citizens and residents.

## M. A. G. CONSULTANTS, INC.

### Topic II-5. Aviation Noise.

#### General Background Information.

The air-traffic-control planner in the San Francisco Bay Area is saddled with an extremely complex task. There are times when a number of mutually contradictory requirements appear simultaneously.

Safety is the first consideration; then attention is given to noise abatement, minimization of flying time, minimization of fuel consumption and, concurrently, an essential lessening of the workload placed on flight crews and air-traffic controllers.

The present Plan endeavors to identify areas of possible improvement of the noise-exposure levels in San Bruno through the removal or diverting of aeronautical sources of noise from the City in a manner that will not impair the safety or efficiency of airports or the air-traffic-control system, and that will not impose or shift significant new noise burdens on other communities.

It is assumed, for the purposes of this Plan, that aircraft overflights over the City of San Bruno at altitudes of 7,000 feet or higher do not present significant noise problems to the City.

Within the space comprised between sea level and 10,000 feet there are three principal centers of aeronautical activity which, together with the FAA air traffic control system, could assist to place greater distance between the sources of aircraft and aircraft-engine noise and noise-sensitive portions of the City of San Bruno, namely:

- (a) The San Francisco International Airport;
- (b) The Naval Air Station Alameda;
- (c) The Oakland Airport.

It is assumed here that all of the three above-named airport facilities are permanent in their present general configuration.

## M. A. G. CONSULTANTS, Inc.

### Topic II-5(a). The San Francisco International Airport.

#### Background Information.

The San Francisco International Airport is the Regional Airport for the San Francisco Bay Area. Its annual passenger volume has increased from about 14 million to over 17 million passengers during the past five years. It serves approximately 330 jet air-carrier takeoffs and 330 jet air-carrier landings per day, totaling 240,000 jet air-carrier operations per year.

On an annual average, some 40 departures per day depart from either of Runways 28 and climb through the San Bruno Gap. Some 40 departures per day depart from either of Runways 28 and make a "Shoreline turn" to the right, passing east of Bayshore Freeway or, in unusual circumstances, to the west of Bayshore Freeway south of or over the eastern spur of Mount San Bruno.

Approximately 111 departures per day depart from either of Runways 01 (pointing from Millbrae northward toward the Bay) and make a left turn over or north of Mount San Bruno and cross the City of San Bruno on a southward course.

It has been made manifest that the Federal Aviation Administration, the Airports Commission of the City and County of San Francisco and its Airport Management, the air carriers, the City of San Bruno, and residents of San Bruno and companies doing business in San Bruno, have exerted and are exerting considerable efforts to reduce the noise-exposure levels in the City of San Bruno resulting from San Francisco air-carrier departures without impacting any residential areas in other communities with CNEL's of 65 dB or higher.

It is also recognized that the operational capacity of the San Francisco runway system affords means for doubling the present passenger volume, assuming, of course, that this can be accomplished within the constraints of diminishing jet-fuel resources. However, even were the fullest expansion of the potentially available passenger capacity of the San Francisco International Airport attained with the use of aircraft of current production types, pending Federal legislation heralds a substantial decrease by approximately 10 dB in the CNEL's produced at any given point in the environs of the San Francisco International Airport, including the City of San Bruno, during the period from 1972 to 1985.

However, the needs of the City of San Bruno are so great for immediate noise abatement from aircraft operations departing from and destined to the San Francisco International Airport, that the following policies are recommended:

## M. A. G. CONSULTANTS, INC.

### Recommendation.

#### II-5(a)(1). Encouragement of the Use, at the San Francisco International Airport, of Aircraft Certificated in Compliance With Federal Aviation Regulations (FAR) Part 36 .

[Aircraft of all classes, ranging from the largest airliners to propeller-driven general-aviation aircraft of less than 12,500 lbs. gross weight, are now subject to compliance with Federal Aviation Regulations (FAR) Part 36, which prescribe that certain noise levels not be exceeded at specified points of a takeoff and an approach during certification flight tests. All newly manufactured aircraft must meet FAR-36 noise criteria. Compliance of existing aircraft with FAR-36 noise criteria (or loss of certification) is the subject of currently pending Notices of Proposed Rule Making (NPRM's). The EPA and the FAA have signified that they expect to promulgate such rules shortly, and all pending NPRM's include a time schedule which provides for compliance by a portion of existing airlines fleets (for example, one-half) by one specified date, and the entire existing airlines fleets by a date some two years later.

In order to ensure that the San Francisco International Airport not become burdened with a prevalence of noisy aircraft of trunk carriers that might be discouraged from operating at the Los Angeles International Airport, the following policy is suggested.]

The City of San Bruno should enlist the co-operation of the City and County of San Francisco, through its Airports Commission, to adopt an operating policy and regulations embodying the encouragement of the use at the San Francisco International Airport of aircraft certificated in compliance with Federal Aviation Regulations (FAR) Part 36, substantially consistent with Resolution No. 7467, as revised by Resolution No. 8372, adopted by the Board of Airport Commissioners of the City of Los Angeles at a regular meeting held on Friday, June 7, 1974, copy of which is attached hereto as Exh. II-1.

### Recommendation.

#### II-5(a)(2). Enforcement of the Operation of Aircraft So That the Certification Limits of FAR 36 Are Actually Complied With at the San Francisco International Airport.

The City of San Bruno should enlist the co-operation of the City and County of San Francisco, through its Airports Commission, to adopt an operating policy and regulations with respect to noise-abatement, and to implement noise-monitoring and disciplinary measures, which should comprise effective provisions for the enforcement of requirements for the operation of aircraft at the SFIA in a manner sufficient to ensure actual substantial compliance by aircraft with the certification noise-level limits spelled out in FAR 36, Appendix C, in their operation at the SFIA.

**M. A. G. CONSULTANTS, INC.**

**Proposed Policy.**

**II-5(a)(2) Enforcement of the Operation of Aircraft .... (cont.)**

The City of San Bruno should request that such policy and regulations be substantially consistent with Resolution No. 7467, as revised by Resolution No. 8372, adopted by the Board of Airport Commissioners of the City of Los Angeles at a regular meeting held on Friday, June 7, 1974, copy of which is attached hereto as Exhibit II-1.

**Proposed Policy.**

**II-5(a)(3). Management of Airspeed, Flap Position, and Engine Pressure Ratio on Departures From Runways 01 and 28 at the San Francisco International Airport.**

The City of San Bruno should urge the air carriers that operate jet flights from the San Francisco International Airport to adopt two different climb procedures for departures from Runways 01 and 28, respectively.

The climb procedure for Runways 01 should be a "best-climb" procedure which provides the early attainment of the most efficient climb speed and climb configuration of the aircraft and which affords the best possible noise abatement climb for areas beginning some six nautical miles from the Airport.

Departures from Runways 01, whether westbound or southbound, should be asked to carry out a "best-climb" procedure substantially as follows:

1. Following takeoff and attainment of a specified safe maneuvering altitude, accelerate to the minimum-drag airspeed (approximately 1.5 times the flaps-up stalling speed) as soon as practicable, consistent with standards, policies, and procedures relative to maximum time at normal takeoff engine pressure ratio and relative to established flap-retraction transition airspeeds.
2. Continue climb to 10,000 feet while gradually increasing the calibrated airspeed from minimum-drag airspeed to 250 knots.

The procedure thus proposed differs from the currently established Air Transport Association (A. T. A.) climb procedure which comprises an extended low-speed climb with flaps deflected and reduced engine power. The A. T. A. climb procedure benefits close-in noise-sensitive areas, but, in the case of over-water climbs, it only affords noise abatement to an open water surface, namely, the San Francisco Bay, and increases the noise exposure in the City of San Bruno and other peninsula areas.

(cont.)

## M. A. G. CONSULTANTS, INC.

### Recommendation.

#### II-5(a)(3). Management of Airspeed, Flap Position . . . (cont.)

The proposed climb procedure is consistent in general with the current PSA climb procedure and with the climb procedure developed and practiced for many years by Northwest Orient Airlines. Many pilots of other airlines are assumed to practice the procedure recommended here on westbound and southbound departures from Runways 01 at the San Francisco International Airport, but the resulting noise-exposure levels over San Bruno are dominated by the noisiest overflights which practice the A. T. A. climb procedure.

Hence the suggested policy for the City of San Bruno to urge the establishment of a formal "best-climb" procedure by all of the airlines after takeoff from Runways 01.

The climb procedure for Runways 28 should be a "close-in noise-abatement" procedure which provides for an early power reduction (and, hence, noise reduction) consistent with a safe minimal climb gradient and which affords an effective noise-abatement climb for areas lying within the first six nautical miles from the Airport.

It is recognized that there is a multiplicity of such procedures for various types of aircraft, ranges of gross weights, wind velocities, etc. It is also recognized that the practical requirements of airline operations make it mandatory that a single standard procedure be used, lest aircraft of different types, weights, and speed ranges create bunching-up problems in a crowded departure air space.

The City of San Bruno should recommend continued improvement and refinement of close-in noise-abatement climb procedures, such as that currently practiced by the A. T. A. and its member airlines, for the needs of noise abatement in the San Bruno Gap and over the City of San Bruno, and that adherence to such procedure be vigilantly maintained for departures from Runways 28.

It is noted, in passing, that the Environmental Protection Agency (E. P. A.) appears to be favoring the establishment of two (rather than one) noise-abatement climb procedures, one for close-in noise-sensitive areas, and another for noise-sensitive areas located a few miles away.

We are informed that the Federal Aviation Administration is about to issue a Notice of Proposed Rule Making (NPRM) which is substantially in accord with the Proposed Policy hereinabove recommended.

## M. A. G. CONSULTANTS, INC.

### Recommendation.

#### II-5(a)(4).      Departure Paths for Southbound Aircraft From Runways 01 of the San Francisco International Airport.

The City of San Bruno should urge the Federal Aviation Administration to explore and, if feasible, to adopt the following changes in departure paths or changes in the use of existing standard instrument departure (SID) paths.

1. PORTOLA SID. Suitable restrictions on altitude, DME distances for turns, etc., to ensure re-cross altitudes over San Bruno of 7,000 feet or higher.
2. New SIDs, affording southbound climbs over the waters of San Francisco Bay, to the fullest extent permitted by safety of air-traffic control. Reference is made here to the so-called "IVY" departure, experimentally explored by the FAA, United Airlines, and PSA in 1971, as an example of a procedure that might be found useful in the present and future circumstances.

It appears possible that the concept of "Standard Instrument Departure" may soon undergo fundamental changes in the San Francisco Bay Area because of the rapid technological and operational advances in the use of the so-called "ARTS-III" radar equipment, in which the identity of each aircraft, its altitude, and its groundspeed are directly projected onto the radar screen. If such changes are introduced, and if individual vectoring of aircraft becomes practicable as a general policy, then we suggest that the City of San Bruno enlist the co-operation of the FAA to provide guidelines for vectoring that seek to achieve the general objectives recommended in the afore-listed two types of SID's.

**M. A. G. CONSULTANTS, INC.**

Recommendation.

II-5(a)(5).      Noise Abatement for the Cities of Millbrae,  
Burlingame, and Hillsborough.

Ever since 1957, the City of South San Francisco has urged a maximum of noise protection for the City of Millbrae, which protection would also inure to the benefit of the cities located south of the City of Millbrae.

While noise produced by the initial application of engine thrust by aircraft departing from Runways 01 is at substantially lower levels of intensity than those impinging on the City of San Bruno from overflights by aircraft departing from Runways 28 and, hence, the use of Runways 01 as preferential runways appear justified by an equitable distribution of the noise burden, the City of San Bruno should continue to urge the Airport Management to make all practicable and effective provisions for an alleviation of the noise burden on the City of Millbrae and the other cities south of the Airport, and that these provisions be developed and implemented with all possible dispatch.

## M. A. G. CONSULTANTS, INC.

### Recommendation.

#### II-5(a)(6). Facilities to Minimize Heavy Departures From Runways 28.

The City of San Bruno should urge the San Francisco International Airport to undertake necessary improvements to Runways 01-Right and 01-Left to minimize the use of Runways 28 by heavy departures in conditions of relatively light wind from a generally westerly direction.

The City of San Bruno should enlist the co-operation of airlines operating heavily-loaded, long-range, departures to explain to the Airports Commission that such departures, in conditions of relatively light wind from any generally westerly direction, find themselves obliged to take off from Runways 28 because the length of Runway 01-Right is so critically foreshortened by the northward displacement of the "full-thrust application point," that the available length of the runway is not adequate for takeoff at the existing gross weight of the aircraft. The City should further enlist the co-operation of the airlines to explain to the Airports Commission that virtually all of such high-grossweight, long-range takeoffs could be made from Runway 01-Right, if the full-thrust application point could be brought back to the physical threshold of the foreshortened Runway 01-Right.

The City should explain to the Airports Commission that takeoffs of heavy aircraft from Runways 28 in relatively light, generally westerly wind inflict the most objectionable single event noise-exposure levels on the low-lying areas of San Bruno and on the areas lying in the San Bruno Gap.

The City should explain to the Airports Commission that three or more extremely heavy departures of this type depart from Runways 28 during the early afternoon hours, while virtually all other departure traffic takes off from Runway 01, and that some additional traffic of this type occurs during the early post-midnight hours.

The City should explain to the Airports Commission that, while such extreme overflight noise events do have some effect on the numerical value of the community noise equivalent level (CNEL), their major impact on people derives from the extreme noise-exposure level of each such event and from the startling and overbearing visual appearance of the huge airframe at low altitude. In addition, the Airports Commission should be made aware that the investment in facilities at Runway 01-Right (as well as to a relatively smaller degree at Runway 01-Left) is fully warranted by the relief that would be afforded to the people of the City of San Bruno for their well-being, safety, health, and welfare.

(cont.)

**M. A. G. CONSULTANTS, INC.**

Recommendation.

II-5(a)(6). Facilities to Minimize Heavy Departures .... (cont.)

The City of San Bruno should ask for the co-operation of the Airports Commission to plan, approve, finance, and construct the following improvements to Runways 01:

1. An aerodynamically fully effective jet-blast deflector on the site of the present blast fender at the southern extremity of Runway 01-Right, so that surface traffic on the Bayshore Freeway be protected against jet blast and turbulence.
2. A northward extension of approximately 1,000 to 2,000 feet for Runway 01-Right.

Consistent with the Proposed Policy II-5(a)(3), urging noise-abatement measures for the Cities of Millbrae, Burlingame, and Hillsborough, it should be emphasized by the City of San Bruno that the afore-described improvement, Item No. 1 hereinabove, embodying an effective jet-blast deflector, should be coupled with provisions for noise attenuation toward the left (downtown Millbrae) and aft (Burlingame).

Moreover, the City of San Bruno should explain to the Airports Commission and to the cities south of the Airport that a northward extension of Runways 01-Right and 01-Left will permit a substantial increase in the gross-weight limit of several types of aircraft up to which "normal takeoff thrust" is sufficient for takeoff, but beyond which gross weight "maximum takeoff thrust" is required, with a concomitant increase in noise levels. Hence, a lengthening of Runways 01 (or either of them) will afford a reduction in noise-exposure levels to the cities south of the airport.

**M. A. G. CONSULTANTS, INC.**

Recommendation.

II-5(a)(7) Minimization of Nighttime Departures.

The City of San Bruno should enlist the co-operation of the SFIA and the airlines to reduce the number of nighttime departures of heavy aircraft.

The City of San Bruno should oppose nighttime departures from the SFIA, scheduled to avoid nighttime arrivals at Far Eastern or other airports, because of prevailing curfews. The observance of a nighttime arrival curfew at a far-off airport is not, in our opinion, a valid reason for the infliction of nighttime departure noise on the citizens and residents of the City of San Bruno.

The City of San Bruno should also oppose any scheduling of "red-eye specials" in the middle of the night on the grounds that efficiency of aircraft utilization should not obtain at the expense of the citizens and residents of the City and their need for a good night's rest. Regardless of the CNEL's involved, one single excessively noisy departure in the dead of the night can arouse virtually the entire city and discomfort thousands of people from the night's rest.

The City of San Bruno should emphasize, however, that the nighttime operation of quiet aircraft that are able to take off from Runways 01, or that are able to make a tight Shoreline turn after takeoff from Runway 28-Right during a specified large percentage of time, might afford an advantage for nighttime departures that could be tolerable to the City.

## M. A. G. CONSULTANTS, INC.

### Recommendation.

#### II-5(a)(8)      Visitacion Rancho (In and Near the Guadalupe Saddle on Mount San Bruno.)

The City of San Bruno should investigate and take all necessary steps to make certain that the Visitacion Rancho development shall not create conditions that would impair the effectiveness of noise-abatement measures long in force at the San Francisco International Airport.

The City of San Bruno should urge the developer and land-use planning agencies not to create a noise-sensitive or otherwise overflight-sensitive residential development in the path of southbound departures from the San Francisco International Airport and the Oakland Airport. Complaints and possible concerted action by future residents could influence and curtail the existing noise-abatement takeoffs from SFIA Runways 01, and result in an overburdening of the San Bruno Gap area with noisy takeoffs from Runways 28. Hence the need for suggested vigilance.

The City of San Bruno should urge the developer on the one hand, and the City and County of San Francisco through its Airports Commission, on the other hand, to enter into a binding contractual arrangement whereby the following balance of undertakings be established:

1. The City and County of San Francisco would agree to its faithful performance of measures to achieve noise abatement, including, but not limited to, the measures described in this present "Plan";
2. The developer, on his or its own behalf and on behalf of its successors, lessees, and assigns, would grant to the City and County of San Francisco (as the owner and operator of the San Francisco International Airport), an aviation easement and a noise easement over any and all parts of its development

The City of San Bruno should make reference to the existing agreement between the so-called "Albright" and "Burke" groups and the City and County of San Francisco as an example of a somewhat comparable agreement, but such reference should in no way limit the scope or the modalities of the contractual arrangement proposed herein.

In the preparation of the proposed arrangement, the possible parties to the arrangement should enlist the advice and concurrence of the Federal Aviation Administration, in its capacity as the agency charged with the responsibility of the control of air traffic, and the airlines, in their capacity as quasi- "real parties in interest" in association with the City and County of San Francisco.

**M. A. G. CONSULTANTS, INC.**

Topic II-5(b).    The Naval Air Station Alameda.

Background Information.

Past and continuing efforts by the Naval Air Station Alameda and the FAA for a minimization of the noise impingement of naval aircraft on cities on either shore of the Central San Francisco Bay are recognized. In particular, it is noted that jet-penetration paths and departure paths for naval aircraft have been adjusted to avoid, for all practical purposes, any interference with operations of other aircraft that might affect the noise environment of the City of San Bruno. Coordination of Naval Air Station activities with the Bay TRACON has been especially effective in diminishing the impact of the Naval Air Station Alameda on aircraft operations in mid-Bay or West-Bay that might have existed prior to 1969.

Recommendation.

The City of San Bruno should encourage the continuation of the present coordination of activities between the FAA and the Naval Air Station Alameda air-traffic control.

## M. A. G. CONSULTANTS, INC.

### Topic II-5(c). The Oakland Airport.

#### Background Information.

The Oakland Airport is the third Bay Area airport in scheduled jet air-carrier passenger volume, following the San Francisco International Airport and the San Jose Municipal Airport. The annual passenger volume of the Oakland Airport has hovered at slightly above two million for the past five years. The Oakland Airport has approximately 50 takeoffs and 50 landings of scheduled jet air-carrier aircraft per day.

The primary function of the Oakland Airport, according to published schedules, is to transport partial loads of passengers for southbound flights from San Jose. In the absence of a BART or bus service between the present Fremont Terminal of BART and the San Jose Municipal Airport, approximately 22 flights (using Boeing 727 and 737, and DC-9 aircraft) proceed daily from Oakland via the general area of the San Francisco International Airport (Brisbane, South San Francisco, San Bruno, Millbrae, etc.), the Woodside area, Portola Valley, to the west and south of the San Jose Municipal Airport, all at 5,000 feet altitude, and thence descend to the San Jose Municipal Airport via a noise-abatement route specified by the City of San Jose through its Airport Commission.

Some 20 additional daily Oakland departures proceed non-stop southbound and southeastbound to destinations beyond San Jose. The latter departures follow generally the PORTOLA SID described in a preceding section of this "Plan," and cross San Bruno usually at or above 7,000 feet altitude.

#### Recommendation.

##### II-5(c)(1) Encouragement of the Use of Aircraft Certificated in Compliance With Federal Aviation Regulations (FAR) Part 36 at the Oakland Airport.

The City of San Bruno should enlist the co-operation of the City of Oakland, through its Board of Port Commissioners, to adopt an operating policy and regulations embodying the encouragement of the use at the Oakland Airport of aircraft certificated in compliance with Federal Aviation Regulations (FAR) Part 36, substantially consistent with Resolution No. 7467, as revised by Resolution No. 8372, adopted by the Board of Airport Commissioners of the City of Los Angeles at a regular meeting held on Friday, June 7, 1974, copy of which is attached hereto as Exhibit II-1, so that aircraft coming from the Oakland Airport overflying the City of San Bruno on their way southward be assuredly aircraft certificated under the provisions of FAR 36. (According to published schedules, about two-thirds of all jet air-carrier operations from the Oakland Airport constitute such overflights).

## M. A. G. CONSULTANTS, INC.

### Recommendation.

II-5(c)(2) Encouragement of the Use of the "Best-Climb" Procedure by Jet Air-Carrier Aircraft Proceeding Southward From the Oakland Airport.

The City of San Bruno should enlist the co-operation of the airlines operating southward from the Oakland Airport to make certain that all such departures, on their way from the Oakland Airport to the general vicinity of the San Francisco International Airport and the City of San Bruno, climb in a manner substantially identical to that described in Proposed Policy II-5(a)(3) hereinabove, in order that the aircraft attain altitude and airspeed as efficiently as possible and thereby minimize the noise impingement upon the City of San Bruno during overflight or flyby.

### Recommendation.

II-5(c)(3) Encouragement of the Speedy Attainment of Altitude by Westflow Departures From the Oakland Airport.

The City of San Bruno should enlist the co-operation of the Federal Aviation Administration to permit the greatest possible number of westflow departures from Runway 29 at the Oakland Airport to attain an altitude of 3,000 feet or higher at the 4 nautical-mile DME point on the departure radial (currently R-288) of the Oakland VOR.

The City of San Bruno should urge the FAA to displace eastbound San Francisco departures eastwardly over and east of the Oakland Airport, if the additional lateral separation obtained thereby between the eastbound San Francisco departure and a departure from Oakland Runway 29 would help to waive any altitude restriction at the 4 nautical-mile DME point upon the Oakland departure, and thereby increase the overflight altitude and airspeed, and, hence, decrease the noise impingement upon the City of San Bruno during overflight of the City by the Oakland departure.

## M. A. G. CONSULTANTS, INC.

Recommendation II-5(c). The Oakland Airport .... (cont.)

### Recommendation.

II-5(c)(4) The Trans-Bay Jet Feeder Service From the Oakland Airport.

The City of San Bruno should urge the earliest possible closure of the gap in public high-speed transportation between the BART terminal in Fremont and the San Jose Municipal Airport to lessen the apparent adverse environmental impact created by the short jet-feeder flights currently operated between the Oakland Airport and the San Jose Municipal Airport via San Bruno and other noise-sensitive peninsula cities. By encouraging the use of a high-speed public ground transportation service between the cities of the East Bay and the San Jose Municipal Airport, the City of San Bruno would also render an added benefit to the airlines in fuel savings and the elimination of unproductive operating costs.

The ground transportation service mentioned above should assure the airlines of a satisfactory passenger-seat-occupancy factor for southbound flights from San Jose, and conserve fuel currently consumed for an uncompensated carriage of passengers from Oakland to San Jose, while relieving the City of San Bruno from exposure to a possibly unnecessary and avoidable noise impingement at times when such noise impingement predominates over other existing noise levels.

For reference, agencies possibly involved in a consideration of this problem, among others, include the Public Utilities Commission (P. U. C.) of the State of California (relative to route approval for intra-State air carriers), the Civil Aeronautics Board (C.A.B.) (relative to route approval for interstate carriers), and the Bay Area Rapid Transit District (BARTD).

In initiating such steps, the City of San Bruno should solicit of the route-approving agencies (P. U. C. and C. A. B.) that every consideration be given to the temporary preservation of the present San Jose Jet Feeder Service from Oakland until the closure of the present gap in public surface transportation between Fremont and the San Jose Municipal Airport is completed, in order that the passenger-seat occupancy factors of airliners southbound from San Jose not be impaired. However, the City of San Bruno should ask that the problem be resolved with all possible dispatch. There is little need to emphasize that the Oakland Airport would also benefit from such an endeavor, since the Airport could then expand its service to points outside the Bay Area to an equivalent degree consistent with demand therefor, without incurring the cost of expansion of terminal facilities and services at the Oakland Airport for such expansion of out-of-Bay-Area air services. (The present jet-feeder service between Oakland and San Jose, paralleling the incomplete BART line in the southern East Bay, is reportedly 41.9 percent of the total current operational volume of the Oakland Airport.)

## **M. A. G. CONSULTANTS, Inc.**

Recommendation II-5(c).      The Oakland Airport ..... (cont.)

### Recommendation.

#### II-5(c)(5)   Southbound and Southeastbound Oakland Departures.

The City of San Bruno should urge the FAA to investigate the feasibility of routing southbound and southeastbound departures from the Oakland Airport over the water of the Bay whenever traffic and air-traffic control procedures permit. Reference is made here to the previously mentioned "IVY" departure route as a possible example. Assuming that the FAA can develop one or more overwater routes, the City of San Bruno should urge the FAA to implement such procedure or procedures and to authorize funds for any additional navigation aids, if such are found to be necessary.

Topic II-5(d).   The Supersonic Transport Airplane.

### Background Information.

British Airways and Air France have filed applications with the FAA requesting permission to operate current production-model Concorde SST's in limited regular commercial service into and out of John F. Kennedy International Airport (JFK) in New York and Dulles International Airport (IAD) near Washington, D. C.

The current production-model Concorde's do not meet the existing noise-level requirements of Federal Aviation Regulations Part 36; in fact, they are noisier than existing Boeing 707 and DC-8 subsonic airliners. Recent noise measurements at Casablanca, Morocco, indicate that the Concorde noise levels are about 2 dB higher than those depicted in Figs. XIII-1 through -3 (Pages XIII-4 through -6) of BOOK TWO of this Noise Element. The FAA is about to issue an amended EIS.

The runways at the San Francisco and Oakland Airports are sufficiently long to accommodate landing and takeoff operations of said Concorde SST. It is conceivable that, once a high-level decision is made to admit said Concorde SST aircraft to JFK and IAD, a precedent would be created to press for their admittance to airports in the San Francisco Bay Area, an action that would bring increased noise levels to San Bruno.

### Recommendation.

The City of San Bruno should urge the FAA and the United States Congress to make any decision regarding the operation of current production-model Concorde SST's at any airport in the United States contingent on an express prohibition of the use of any runway in the San Francisco Bay Area by any supersonic airplane that is not certificated in accordance with the requirements of FAR 36.

## M. A. G. CONSULTANTS, INC.

### III. BARRING THE PATH OF THE NOISE FROM ITS SOURCE TO THE RECIPIENT

#### Background Information.

Sound propagates by line of sight and along bent scattering paths. A barrier placed close to the source of a sound and a barrier placed close to a recipient can be an effective means for diminishing the intensity of the impacting sound at the site of the recipient. The effectiveness of a barrier is impaired when placed somewhere near midway between the source and the recipient.

Barriers may be undesirable, because they create the appearance of dungeon-like walls. They may also be undesirable because they could create problems of security to unguarded areas (for example, by providing hiding places for ill-intentioned individuals) and possible problems of entrapment of people in confined places. These and other considerations must be weighed carefully in any planning for noise barriers, especially within an established and substantially developed city.

#### Recommendation.

##### III-1. Street and Highway Noise.

###### III-1(a). Barriers on the Elevated or Unshielded Portions of Freeway Routes 280, 380, and 101.

Pursuant to circular letter from the Department of Transportation of the State of California, P.O. Box 3366, Rincon Annex, San Francisco 94119, dated January 9, 1975, on the subject of "Proposed Noise Attenuation Projects on Existing Freeways," we suggest that the City of San Bruno request consideration by the Department of Transportation of a noise barrier along the following route segments of Freeway Routes 280, 380, and 101.

###### Interstate Route 280.

1. Along the northeastern flank of the Freeway, from the Jenevein-Avenue overpass to the San Bruno-Avenue overpass.
2. Along the southwestern flank of the Freeway, from San Bruno Avenue to the Crystal-Springs Avenue off-ramp.

###### Interstate Route 380; Both Sides of the Freeway.

East of the El Camino Overpass, wherever the Freeway structure overlooks and is contiguous to an area intended for continuing, permanent, residential zoning. This should include ramp structures equally situated.

###### Bayshore Freeway, Route 101; the West Side of the Freeway only.

1. From the San Bruno - South San Francisco city limit to, and including, the westbound off-ramp to San Bruno Avenue.
2. From the San Bruno Avenue on-ramp to the Airport off-ramp, if no noise barrier is constructed along the railroad right-of-way (see Recommendation III-2 that follows); from the San Bruno Avenue on-ramp to the extended alignment of Cupid Lane, if a noise barrier is constructed along the railroad right-of-way (see Recommendation III-2 that follows).

## M. A. G. CONSULTANTS, INC.

### III. Barring the Path of the Noise (cont.)

#### Recommendation.

##### III-1(b) Barriers Along Selected Streets in San Bruno.

It is suggested that the City of San Bruno consider the possibility and advisability of the construction of noise barriers along certain segments of streets in San Bruno. No precise detail can be offered at this time, because the construction of a noise barrier within a city is a matter of individual study and the balancing of numerous esthetic and security aspects against the acoustic effectiveness of a barrier. In terms of broad suggestions, the following are offered as examples:

1. A noise barrier along the southeastern flank of Sneath Lane, from the Freeway on-off ramp to the U. S. Naval reservation.
2. A noise barrier along the southeastern flank of San Bruno Avenue, connecting with the above-described Freeway noise barrier proceeding off Route 280 and extending northeastward to Magnolia Avenue.
3. Noise barriers along the frontage of schools exposed to intense traffic noise.

In some instances, noise protection by barriers may be sufficient in front of main entrance doors only, so that noise suppression may be afforded without interfering with an ample intake of ventilation air into the school building. While this has not been customary in San Bruno, such an arrangement is not unusual in some subtropical countries, where security, noise abatement, and interior ventilation must be combined, and exterior barriers on the traffic-noise side of a public building can help to achieve both.

It is essential that the design of each individual noise barrier be subjected to an esthetic design review, to forestall any possible disadvantages to the architectural character of the City. The simplest type of barrier consists of precast concrete panels, typically six to ten feet high, approximately twelve feet long, and three and one-half inches thick. The panels are supported by suitably shaped, square posts with vertical grooves three and one-half inches wide. The surface of the panels is generally sculptured with a repetitive pattern.

The exterior side of noise barriers can be rendered less monotonous by the planting of low-crowned bushes (for example, *Cupressus glabra*, the Arizona cypress). The yard or garden side of noise barriers can, in some instances, be terraced with shelf-like "hanging gardens" comparable (according to the suggestion of a citizen of San Bruno) to the retaining wall west of Interstate Route 280 near Mariposa Street in San Francisco.

## M. A. G. CONSULTANTS, INC.

### III. Barring the Path of the Noise (cont.)

#### Recommendation.

#### III-2. Railroad Noise.

The City of San Bruno should enlist the co-operation of the Southern Pacific Transportation Company to provide for, in the alternative, to permit construction of) noise barriers along the following route segments:

1. Along the southwestern flank of the main line alongside Huntington Avenue from Angus Avenue to the Millbrae City Limit (southeast of Santa Maria Avenue). Installation of such a noise barrier would obviate the need for a part of the noise barrier proposed for Bayshore Freeway (see Proposed Policy III-1(a) hereinabove).
2. A noise barrier on the railroad side of Bellaire School (see Proposed Policy that follows).
3. Along the inner and outer perimeters of the railroad right-of-way between North Bayshore Circle and South Bayshore Circle, between Herman Street and Huntington Avenue, if the "flat-iron wedge" between Herman Street, Huntington Avenue, and Tanforan Avenue is intended for continuing, permanent, residential zoning.

#### Recommendation.

#### III-3. Industrial Noise.

The City of San Bruno should initiate a program to identify objectionable individual industrial noise sources and enlist the co-operation of the respective owners and operators toward constructing attractively designed noise barriers wherever possible to protect residents and the by-passing public from excessive noise.

#### Recommendation.

#### III-4. Airport Noise.

To the extent that zoning permits commercial or industrial buildings to be erected as a protective line-of-sight barrier between the Airport and residential areas adjacent to Bayshore Freeway, the City of San Bruno should identify locations where buildings of reasonable height could serve as an effective noise barrier and seek to stimulate appropriate design and site planning of such buildings to create a shielding noise barrier against ground noise generated on the Airport property. The City of San Bruno should also seek to encourage the Airport Management to include, in its plans for development of the airport property west of Bayshore Freeway, design and site-plan criteria that would result in the construction of noise-shielding buildings between the Freeway and the San Bruno city limit.

## M. A. G. CONSULTANTS, INC.

### IV. SHIELDING THE RECIPIENT OF NOISE WITHIN HIS DWELLING OR PLACE OF WORK.

#### Topic IV-1. Noise Insulation Requirements for Dwellings.

##### Recommendation.

###### IV-1(a) A Noise Insulation Ordinance for the City of San Bruno.

The City of San Bruno should adopt a Noise Insulation Ordinance consistent with Title 25, Section 1092, of the California Administrative Code. (Exh. II-2)

The City of San Bruno should study the possible extended applicability of the noise-reduction requirements of such an ordinance to either or both of two categories of dwellings:

1. Single-family dwellings which are constructed as part of a subdivision requiring a final subdivision map and which are located within a high-exposure area;
2. All detached single-family dwellings.

###### IV-1(b) Noise Insulation for Detached Single-Family Dwellings.

In particular, the City of San Bruno should acquaint all builders, including individuals who seek building permits for single-family detached dwellings, with the relatively inexpensive improvements that afford compliance with existing noise-insulation laws for other dwellings and, hence, enhance the livability and value of a single-family detached dwelling from the point of view of both noise reduction and cooling-and-heating energy requirements.

Publication of a simple booklet is suggested to assist individual builders.

#### Topic IV-2. Noise Insulation Requirements for Non-Residential Buildings.

##### Recommendation.

The City of San Bruno should establish noise-insulation requirements for non-residential buildings for which no state requirements exist, such as office buildings, schools, institutional buildings of all kinds, and industrial plants in which the interior noise meets State regulations, but which are affected adversely by intruding exterior noise. While recently proposed schools have received professional advice on an individual basis as part of the current Noise Element project, permanent noise-insulation requirements should be set up by city ordinance. A survey of noise-insulation requirements of existing schools in San Bruno is likely to reveal serious deficiencies in avoidable outdoor-to-indoor noise leakage and interior acoustical deficiencies in room-to-room noise transmission and possibly the reverberation characteristics of individual classrooms. The City of San Bruno and its School District should examine both the location and the inadequate outdoor-to-indoor noise-reduction characteristics of the Belle Air School and make a determination whether it would be advisable in the interest of the quality of education and the health and welfare of the schoolchildren to discontinue the operation of the school or whether to improve or reconstruct the school buildings.

## M. A. G. CONSULTANTS, INC.

### V. AVOIDING THE PLACEMENT OF POTENTIAL RECIPIENTS OF NOISE INTO THE IMPACT AREA OF UNAVOIDABLE, UNABATABLE, IRREMOVABLE, NOISE.

(Noise Criteria for Land-Use Planning in the City of San Bruno).

#### Background Information.

The City of San Bruno should give its serious consideration to the possible advisability of re-zoning for other than residential use of the Belle Air area and the triangular area between Huntington Avenue, Herman Street, and Tanforan Avenue. Even though it is our expectation that this area will lie on or near the annual 65-dB CNEL contour by 1985, there can be little doubt that it will lie within the daily, weekly, or monthly 65-dB CNEL contours during the summer months when use of Runways 28 predominates for takeoff, and it is likely, also, that individual takeoff noise events occasionally will create noise-exposure levels to which residents should not be subjected outside or inside their dwellings.

It is submitted that any decisions by the City of San Bruno must be made contingent on the amount and degree of noise relief that could be obtained by the improvements proposed hereinabove for Runways 01, which should draw away from Runways 28 excessive noisy departure traffic.

#### Recommendation.

The City of San Bruno should include noise considerations in all future land-use decisions, with the objective of excluding and removing noise-generating or noise-radiating land uses from existing noise-sensitive areas and with the concurrent objective of preventing noise-sensitive land uses from expanding toward unabatable sources of noise. Steps should be taken by those who are creating unnecessary noise to reduce that noise.

One of the purposes of a noise element is to inform persons and businesses who might not be aware that they are producing unnecessary noise, that a need for reducing such noise in the community exists, and that foreseeable unnecessary potential noise should be proscribed.

Before determining that a land use is in fact noise-sensitive, an assessment should first be made of whether or not the noise that impinges on the location of the proposed land use is necessary, or whether the noise can be reduced without curtailing legitimate activities of the noise maker. Where noise-exposure levels cannot be reduced without curtailing legitimate activities, compatible land use should be planned and achieved. The following numerical exterior noise-exposure level criteria for land-use planning within the City of San Bruno are suggested for the interim, pending the anticipated formulation and adoption of such criteria by State and Federal Governments:

# M. A. G. CONSULTANTS, INC.

## Recommendation.

### V-1. Residential With Anticipated Outdoor Activities.

Total annual exterior CNEL 68 dB, of which up to 65 dB may be contributed by aircraft and aircraft-engine noise, except that nighttime HNL\* shall not exceed 55 dB.

This category includes all but high-rise hotel, motel, and apartment-house residential land use.

### V-2. Residential Without Anticipated Outdoor Activities.

Total annual exterior CNEL 70 dB, of which up to 67 dB may be contributed by aircraft and aircraft-engine noise, except that nighttime HNL shall not exceed 55 dB.

This category includes hotels, motels and high-rise apartment houses.

### V-3. Schools, Churches, and Concert Halls.

HNL not to exceed 65 dB total during hours of contemplated activity.

### V-4. Office Buildings and Other Commercial Establishments.

HNL not to exceed 70 dB total during hours of contemplated activity.

### V-5. Industrial Establishments With Self-Generated Interior Noise Levels Not Exceeding 45 dB.

Same as category 4.

### V-6. Industrial Establishments With Self-Generated Interior Noise Levels Exceeding 45 dB.

HNL<sub>exterior</sub> not to exceed: [HNL<sub>interior</sub> plus 25 dB].

### V-7. Recreational Areas.

Total HNL 65 dB during activity periods.

It should be noted that the criterial noise levels are those levels that must prevail outside the actual structure. Such levels may be exceeded at the time of a planning study but must be attainable by practicable measures, such as the following:

\* HNL, the hourly noise level in decibels, as defined in Title 4, Subchapter 6, Section 5006(e), of the California Administrative Code, is the average noise level during a particular hour, obtained by an averaging on an energy basis over the period of that hour. Substantially the same as the average equivalent hourly noise level, (L<sub>eq</sub>) hr., as defined by the U. S. Environmental Protection Agency.

HNL values for the 24 hours of the day, for streets exceeding an hourly traffic volume of 200 vehicles (non-directional), are on file in the City Offices. HNL values for air traffic during the day are deemed to be numerically equal to the CNEL at a given location (for the day-and-night traffic distribution currently obtaining in the San Francisco Bay Area); HNL's at night are estimated to be 10 decibels lower in number than the stated CNEL at a given location.

**M. A. G. CONSULTANTS, INC.**

**V. Noise Criteria for Land-Use Planning in the City of San Bruno (continued).**

Noise abatement at the source;

Shielding by means of barriers;

Removing the source of the noise to a greater distance from the recipient structure;

Removing the recipient structure to a greater distance from the source of the noise.

In each specific instance the individual circumstances must be taken into consideration.

## M. A. G. CONSULTANTS, INC.

### PLAN FOR HEIGHT LIMITATIONS FOR PROPOSED BUILDINGS AND OTHER STRUCTURES WITHIN THE CITY OF SAN BRUNO AND NEARBY CITIES TO PROTECT ESSENTIAL AND SAFE NOISE-ABATEMENT FLIGHTPATHS AT THE SAN FRANCISCO INTERNATIONAL AIRPORT AGAINST OBSTRUCTIONS OR HAZARDS.

#### Background Information.

The continuous availability of safe noise-abatement flightpaths for the benefit of the City of San Bruno and its citizens and residents is, in part, contingent on the perpetual preservation of adequate airspace within which airplanes can perform right-turn climbs along the so-called "shoreline route" after takeoff from Runways 28 at the San Francisco International Airport.

It is evident, from a careful study of Federal Aviation Regulations Part 77 (FAR 77) and other documents cited in and relied upon by FAR 77, that there are no Federal regulations which afford comprehensively the protection needed for the City of San Bruno or the San Francisco International Airport. In the present circumstances, the regulations that obtain appear to render possible the erection of some high-rise structures in San Bruno with the acquiescence by the Federal Aviation Administration (FAA) and the California Department of Transportation (formerly the Department of Aeronautics or the Division of Aeronautics), even though such buildings could preclude the use of essential noise-abatement flightpaths at the San Francisco International Airport.

The situation is extremely complex. On the one hand, the FAA has consistently maintained that its function relative to obstruction evaluation is purely advisory and that its hands are tied by the narrow mandate allowed the FAA in this matter pursuant to the present terminology of FAR 77. On the other hand, the National Transportation Safety Board, the Air Line Pilots Association, the Air Transport Association, and M.A.G. Consultants, Inc., have all recently expressed to the Administrator of the FAA their individual serious concern over the level of adequacy of the existing FAA obstruction standards on which the FAA relies in making "hazard" and "no-hazard" determinations relative to proposed man-made obstacles. Such concerns have been manifested by recommendations, petitions, and supporting data filed in a particular airspace controversy that is pending currently before the Administrator of the FAA and the Airport Land Use Committee of the County of San Mateo.

(cont.)

## M. A. G. CONSULTANTS, INC.

### Plan for Height Limitations for Proposed Buildings.

#### Background Information (cont.)

Proposals for at least interim relief in the circumstances of the apparent inadequacy of current FAA obstruction-evaluation standards were made recently by M. A. G. Consultants, Inc., to the TERPS (Terminal Instrument Procedures) Advisory Committee and were adopted by the Committee on March 7, 1975, for possible inclusion in the forthcoming "Change No. 3" to the U. S. TERPS Manual.

#### Recommendation.

The City of San Bruno should establish a vertical planning boundary, comprising specified sloping planes, horizontal planes, and height-above-ground limits, for the guidance of planners, developers, and architects throughout the City. Following the anticipated issuance of Change No. 3 of the TERPS Manual in the Fall of 1975, and with due consideration to its criteria, the City should issue a draft proposal comprising notice requirements and criteria for the determination by the City Planning Commission, together with an environmental impact report, and should solicit comments and recommendations from the public, as well as from the Management of the San Francisco International Airport, the air carriers, airline pilots associations, fixed-base operators operating on the Airport, and the Federal Aviation Administration, and, following public hearings thereon, submit a formal, precisely specified draft ordinance to the City Council for its adoption.

The City of San Bruno should enlist the co-operation of the other cities adjacent to the San Francisco International Airport, including Brisbane, South San Francisco, Daly City, Millbrae, and Burlingame, in conjunction with the Airport Land Use Committee of the County of San Mateo, to proceed with a parallel, coordinated, effort to preserve the existing (fought-for and hard-won) essential and safe noise-abatement flightpaths in the environs of the San Francisco International Airport through the establishment of maximum permissible elevations of proposed buildings and other structures within all the cities adjacent to the Airport.

**M. A. G. CONSULTANTS, INC.**

**PLAN FOR CONTROL OF LIGHT SOURCES AND LIGHT REFLECTIONS  
TO AVOID DISORIENTATION OF PILOTS.**

**Background Information.**

Noise abatement, as well as safety, is furthered by the avoidance of visual disorientation of pilots, especially during initial climb and during final approach to a landing. There are many instances when a visually disoriented pilot will resort to a sharp and noisy application of power. Visual disorientation can be caused by light reflections or by light sources on the ground.

**Recommendation.**

The City of San Bruno should establish, by ordinance, that no land in the City shall be used for the erection of or operation of any object that could reflect the light of the sun toward an aircraft engaged in an initial straight climb following takeoff at the San Francisco International Airport or toward an aircraft engaged in a straight final approach toward a landing at the San Francisco International Airport.

The City of San Bruno should also establish, by ordinance, that no land in the City shall be used for the erection or operation of an object which directs a steady light or a flashing light of white, red, green, or amber color toward an aircraft engaged in an initial straight climb following takeoff at the San Francisco International Airport, or toward an aircraft engaged in a straight final approach toward a landing at the San Francisco International Airport, other than an FAA-approved navigational signal light or a visual approach-slope indicator (VASI).

# M. A. G. CONSULTANTS, INC.

## NOISE ABATEMENT FOR SAN BRUNO

### PROPOSED ACTION

It is recommended that the City of San Bruno adopt and implement the noise policies enumerated and proposed in the "Plan" detailed in the foregoing pages.

Numerous details remain to be investigated.

The specifics of some of the local noise problems mentioned in the "Plan" need to be identified by observation and measurement.

Language of several ordinances, developed and formulated to meet the peculiar needs of the City of San Bruno, needs to be drafted.

It is recommended that the City of San Bruno establish a quasi-legislative advisory body, namely, a Noise Task Force which, in accordance with a Noise Task Force Plan to be established and adopted by the City Council, shall draw plans to formulate guidelines for ~~at least~~ the following activities:

#### I. Within the Municipal Jurisdiction of the City of San Bruno.

1. Review and updating of the extant noise-control ordinance.
2. Drafting of a building noise-insulation ordinance.
3. Establishment of an Environmental Standards Section in the Engineering Department of the City of San Bruno.
4. Enforcement of the California Vehicle Code Operational Noise Standards with the City of San Bruno, including but not limited to the setting up of a Noise Abatement Unit in the City Police Department.
5. Control of traffic on the streets of the City for noise abatement.
6. A review of the City Zoning Map and formulation of proposals for revisions, if necessary, to ensure noise-compatible development throughout the City.
7. A review of the present and future status of the Bellaire School.
8. Formulation of noise-related architectural design-review criteria, among which are site planning, building-configuration design, and the development and maintenance of structural and vegetational sound barriers, and the establishment of maximum-height criteria for buildings and other structures proposed for the eastern portions of the City.

**M. A. G. CONSULTANTS, INC.**

Noise Abatement for San Bruno (cont.)

Proposed Action.

II. Outside of the Municipal Jurisdiction of the City of San Bruno,  
But Within the City Limits of the City of San Bruno.

1. Enlistment of the co-operation of citizens groups and citizens.
2. Enlistment of the co-operation of the San Bruno Park School District, the governing entities of other than public schools, and individual schools.
3. Enlistment of the co-operation of local industries.
4. Enlistment of the co-operation of the railroad operators.
5. Enlistment of the co-operation of bus operators.

## M. A. G. CONSULTANTS, INC.

### Noise Abatement for San Bruno (cont.)

#### Proposed Action.

#### III. Outside the City Limits of the City of San Bruno.

1. Enlistment of the co-operation of industries and industrial complexes in San Bruno and other nearby cities.
2. Enlistment of the co-operation of the City & County of San Francisco, through its Airports Commission.
3. Enlistment of the co-operation of the Federal Aviation Administration.
4. Enlistment of the co-operation of the scheduled air-carrier members of the Air Transport Association, Pacific Southwest Airlines, Air California, the National Business Aircraft Association, and the principal fixed-base operators, lessees, and tenants at the San Francisco International Airport.
5. Enlistment of the co-operation of the Air Line Pilots Association, the Allied Pilots Association, the Southwest Aircrews Association, etc.
6. Enlistment of the co-operation of the following government organizations; among others:
  - a. The State of California;
  - b. The Association of Bay Area Governments;
  - c. The Metropolitan Transportation Commission;
  - d. The Airport Land Use Committee of the County of San Mateo.
  - e. The Public Utilities Commission of the State of California;
  - f. The Civil Aeronautics Board of the United States of America;
  - g. The Environmental Protection Agency of the United States of America;
  - h. The Bay Area Rapid Transit District;
  - i. The City of Oakland, through its Board of Port Commissioners.
  - j. The City of San Jose, through its Airport Commission.

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